

# THE IRON AGE

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## A New Pennsylvania Railroad Power Plant

The Only Ore Handling Plant on the Lakes  
Using Steam Turbines for Power—Economical  
Handling of Coal and Ashes a Special Feature

A power plant which is of more than ordinary interest has recently been placed in operation by the Pennsylvania Railroad Company at Cleveland, Ohio, in connection with its new ore handling plant at that city, which was completed for use at the opening of navigation this season. This plant was designed to meet the requirements where the load is a rapidly varying one. It is also of interest because it is stated that it is the first power plant on the lower lakes in which steam turbines are installed for furnishing power in connection with an ore handling plant.

An important feature of the plant is the convenient arrangement for the economical handling of coal and ashes.

This plant, an exterior view of which is given in Fig. 1, was designed to furnish power and light to take care of the Pennsylvania Company's requirements throughout the entire Cleveland district, extending as far east as Newburg station, and to allow for an ultimate extension to building and equipment to a maximum capacity of approximately 10,000 hp. The major part of the load consists of the ore handling machinery, comprising the four ore unloading machines and one bridge for conveying ore to the storage pile.

The engine room equipment, a portion of which is shown in Fig. 2, consists of three 750-kva. turbo-generators and three condensing turbines operating at 3600 r.p.m., three non-condensing turbine-driven jet condensers, one 25-kw. turbine-driven exciter set and one 25-kw. motor-driven exciter furnished by the Allis-Chalmers Company; three 500-kw. rotary converters and one 500-kw. flywheel equalizing generator set furnished by the Westinghouse Electric & Mfg. Company and one 21-panel switchboard

furnished by the Fort Wayne Electric Works of the General Electric Company. The arrangement of the various units is brought out in Fig. 3. The engine room is served by a 15-ton handpower traveling crane furnished by the Whiting Foundry & Equipment Company.

All the light and power, with the exception of the power required to operate the ore handling machinery, is taken directly from the turbo-generator. This power is three-phase, 60-cycle, 2200-volt alternating current. All of the electrical equipment of the ore handling machinery is

direct current, power for which is obtained from the three 500-kw. rotary converters, two of which are necessary to handle the load, leaving one for emergencies. This power is delivered at 250 volts through two circuits, one to the unloading machines and one to the bridge. The motor equipment of the bridge consists of two 225-hp. hoisting and loading motors, two 75-hp. trolley motors, two 75-hp. bridge motors and two 25-hp. hopper gate operating motors. The four unloading machines are equipped with one 300-hp. beam hoist motor, one 100-hp. trolley motor, one 100-hp. bucket closing motor, one 25-hp.

bucket rotating motor, one 150-hp. hopper operating motor, one 150-hp. larry car hauling motor and one 35-hp. larry car gate operating motor. These motors are all Westinghouse 250-volt direct-current units, the control equipment being of Cutler-Hammer manufacture.

The bridge under operating conditions gives a maximum in the power plant of approximately 1600 kw. and the peak on the unloader circuit amounts to about 2000 kw., so that the total direct-current load on the power plant is a rapidly varying one, ranging from 200 to 1600

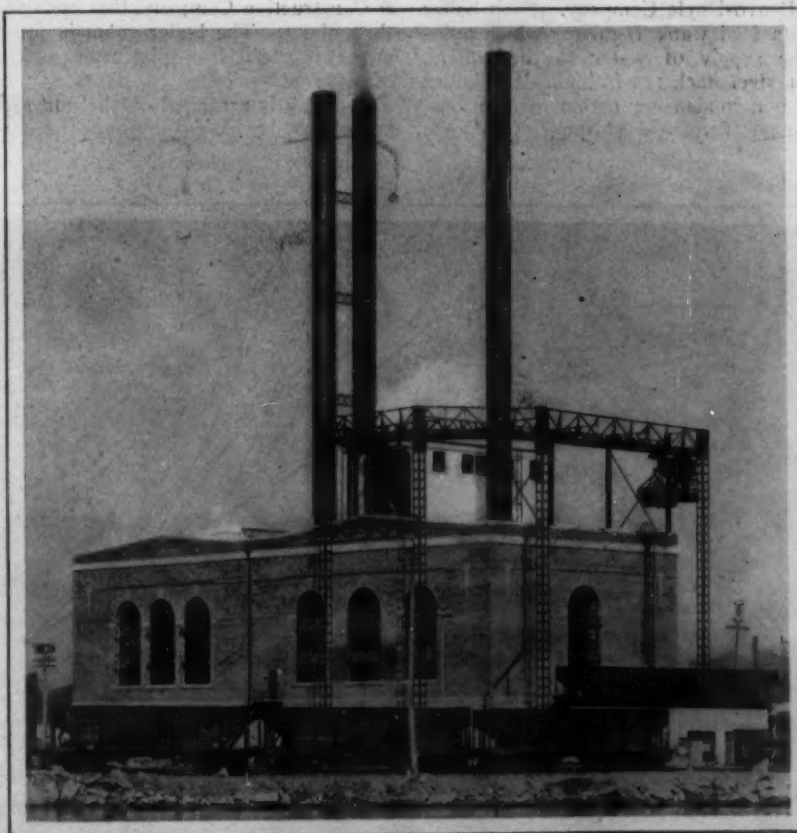


Fig. 1—View of the New Pennsylvania Railroad Powerhouse at Cleveland, Ohio, Showing the Coal Conveying Equipment

kw., frequently in intervals of from 15 to 25 sec. To smooth out these peaks the flywheel equalizing generator set was installed. This is designed to take an overload of 100 per cent. for 10 sec. every 2 min. By referring to the power plant output and peak load above it will be noticed that the equalizer set delivers approximately 20 per cent. of the current at peak loads. The armature shaft carries a 20-ton flywheel which is built up of steel plates. The diameter of the flywheel is 10 ft. and the face width is 13 in. The machine has three bearings and is designed to run between a normal maximum speed of 720 r.p.m. and a normal minimum speed of 600 r.p.m. The storing capacity of the flywheel is 25,000 hp.-sec. The set is equipped with a liquid field regulator which automatically regulates the speed of the armature and this unit can be set to keep the load on the rotary converters constant within approximately 10 per cent. With the load below normal the machine runs as a motor, storing energy in the flywheel. As the sudden peaks come on the plant the machine operates as a generator giving up energy to the line.

The direct-current power circuits are carried from the plant underground in lead covered cable. The circuit to the unloaders consists of seven 10,000,000 cir. mil. cables in each leg. The bridge circuit consists of two 1,000,000 cir. mil. cables in each leg.

In the boiler room there are three 600-hp. Sterling water tube boilers of special design that deliver steam at 150-lb. pressure with 100 deg. superheat, set two in a battery and one single setting. These boilers are equipped with Roney mechanical stokers furnished by the Westinghouse Machine Company. The boiler room equipment also includes a 2500-hp. Cochran feed water heater and purifier furnished by the Dravo-Doyle Company. Each boiler is equipped with a Kitts feed water regulator which automatically regulates the supply of water to the boilers. Each boiler has a 66-in. steel stack 125 ft. high. The boiler feeds consist of two non-condensing turbine-driven centrifugal boiler feed pumps, furnished by the Dravo-Doyle

Company, each of which has a capacity of 400 gal. per min., working against a 430-ft. head. The general service water for the heater glands and water cooled bearings of the plant is furnished by two vertical motor-driven centrifugal pumps, supplied by the Watson-Stillman Company, each capable of delivering 500 gal. per min. against a 30-ft. head. The boiler room is designed to allow the installation of three additional 600-hp. boilers or an increase in the present equipment of 100 per cent.

The handling of coal for the boilers is economically accomplished by the installation of a monorail Sprague electric hoist with a 3 cu. yd. grab bucket. The coal, as will be noticed from Figs. 1 and 3, is taken up the hoist on the runway located above the building and is dropped into coal hoppers where it is fed by gravity into the stokers. The hoist is operated at a speed of approximately 300 ft. per min. With this arrangement a 24-hr. supply of coal can be stored in the hoppers in about 1½ hr. with the labor of one man. The boiler room is located above the grade level, allowing sufficient headroom to run hopper cars underneath the boilers to receive the ashes from chutes. These chutes are so located that the ashes may be fed directly into the cars, thus doing away with practically all labor in connection with the handling of ashes.

The lighting current for the ore machines is taken directly from the direct-current power mains. The lighting of the yards around the machines and power plant is accomplished by the use of 6.6 ampere series magnetite arc lamps and 50 of these are mounted in gaspipe frames on top of 40-ft. cedar poles. The lamps and the regulating equipment are of General Electric Company's manufacture.

The entire system of piping in the power plant was furnished and installed by the Pittsburgh Valve Foundry & Construction Company, that company's valves being used throughout. The boiler room is fitted with complete layout of latticed iron platforms and ladders which allow of easy accessibility of doors for cleaning boilers, etc. The piping is arranged on the unit system so that any one boiler can be used for supplying any one of the prime

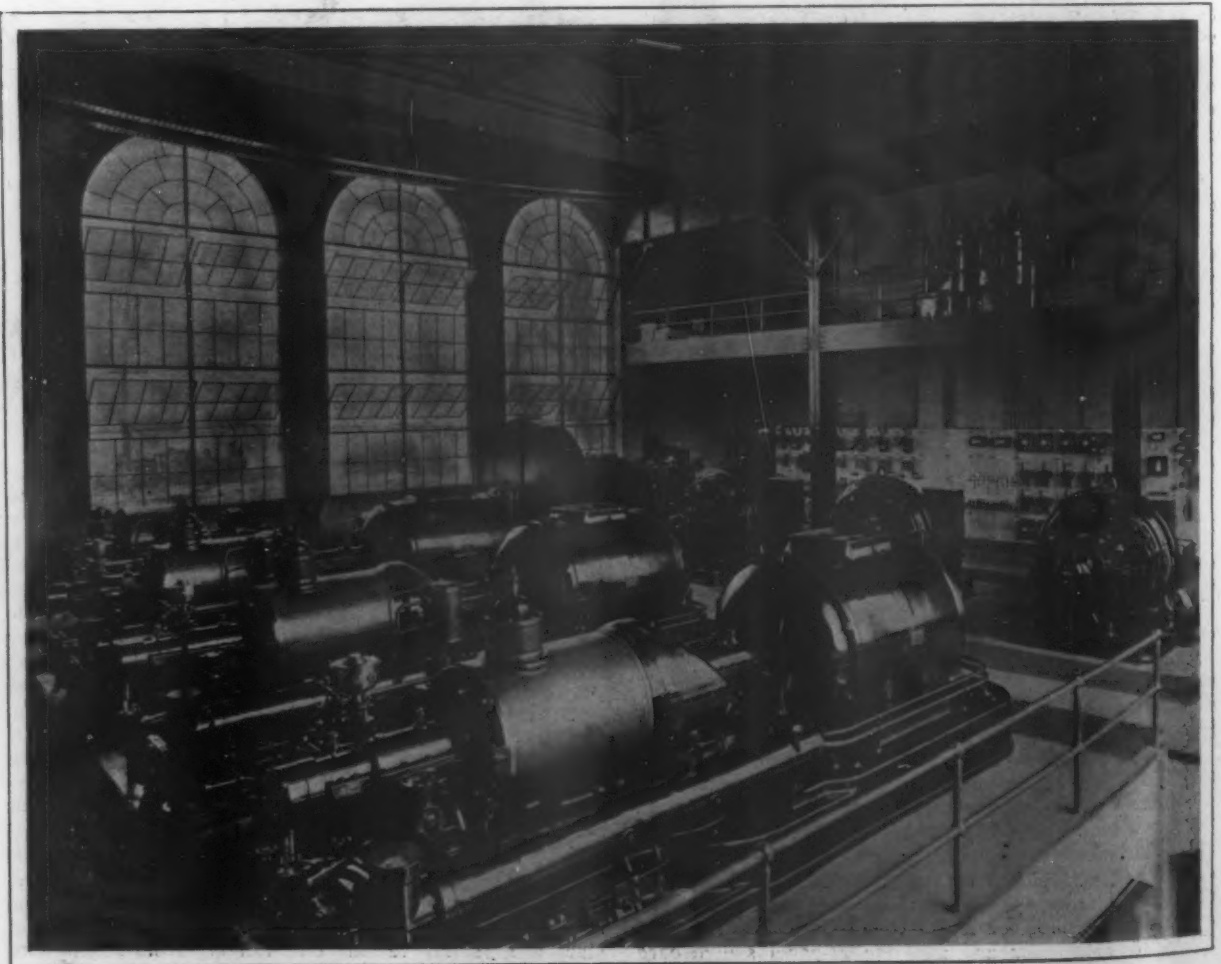


Fig. 2—Interior View of the Power House Showing the Turbo-Generators, Converters, Switchboards, Etc.



movers. One auxiliary steam header is installed and so arranged that repairs can be made to any part of the main header without interfering with the operation of the plant.

handling plant of the Pittsburgh & Conneaut Dock Company at Ashtabula Harbor, Ohio, in *The Iron Age*, July 21, 1910. The unloaders installed at the Pennsylvania plant in Cleveland are similar in general design to those referred to above and other latest types of Hulett unloaders in use on Lake Erie docks with the exception that they are of larger capacity, heavier construction and have somewhat more rapid speed of operation. The capacity of the un-

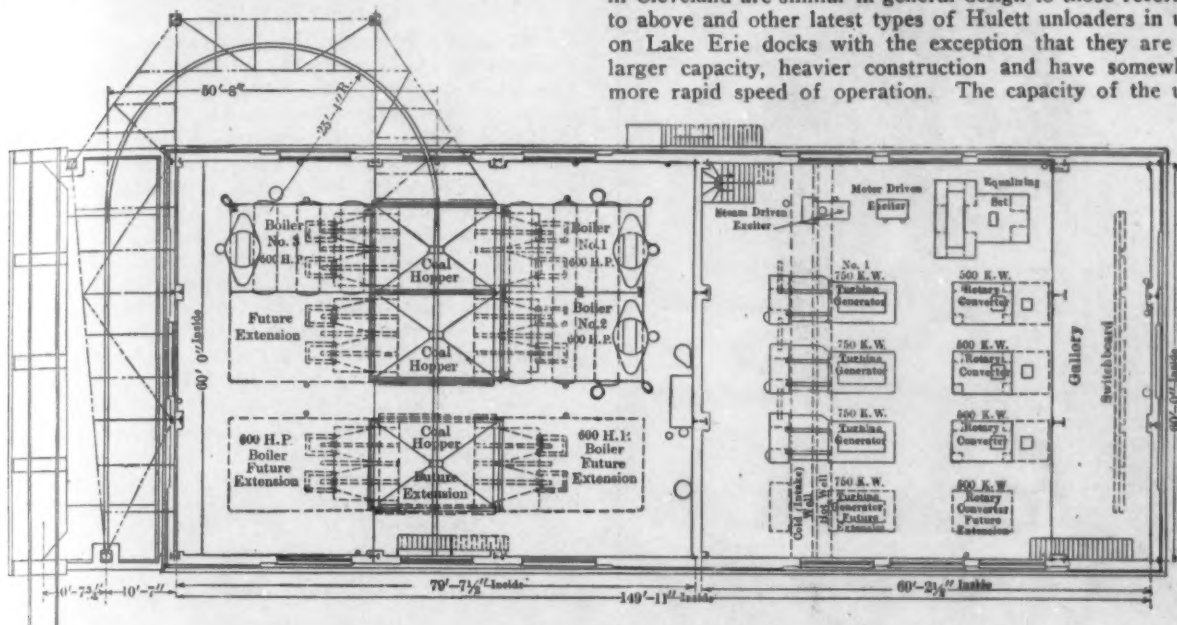


Fig. 3—Plan View of the Power House Showing the Arrangement of the Machines

The foundations for the building and machinery are of reinforced concrete set on 40-ft. concrete piles driven into the ground, the reinforced concrete structure extending to the engine room and boiler room floor. The building above the foundation is of structural steel and brick.

The ore handling plant and power plant are located on the lake front, facing the breakwater in Cleveland, a short distance west of the mouth of the Cuyahoga River. The plans for building the plant necessitated the filling in of about 40 acres of land with slag and dirt and the building of a dock. This work, including the erection of the plant, required about two years' time. A ground area of about 1850 ft. long and 850 ft. wide was filled in requiring approximately 1,000,000 cu. yd. of material. The dock along the lake front is of reinforced concrete construction. The dock consists of a double row of 40-ft. reinforced concrete piles spaced 3 ft. between centers. These piles support a concrete superstructure heavily reinforced with 80-lb. rails. The unloader legs are supported on a reinforced wall parallel to and about 75 ft. distant from the dock face.

The ore handling equipment consists of four 17-ton Hulett unloaders and a 15-ton ore stocking and unloading bridge. The unloaders and bridge, which are shown in Fig. 4, were built and installed by the Wellman-Seaver-Morgan Company, Cleveland, Ohio. General details relating to the mechanical design of one of the latest types of Hulett unloaders appeared in a description of the ore

loaders, 17 tons each, is 2 tons more than those in previously erected Hulett plants. The capacity of the receiving hopper is 70 tons as compared with 60 tons and the weighing larry bin has a capacity of 50 tons as compared with 35 tons in the Pittsburgh & Conneaut plant.

Ore boats 12 ft. longer and 4 ft. wider than had been built when the previous large Lake Erie ore handling plants were designed are now running on the Lakes and the new Pennsylvania plant in Cleveland is designed to accommodate these huge freighters, which are 617 ft. long and 64 ft. beam. The capacity of the four machines that are shown in action in Fig. 6 is placed at between 35,000 and 40,000 tons a day, double shift.

The new plant is said to be the most complete ore handling plant in existence. The unloaders are arranged along the face of the dock and are used for unloading the ore from boats lying alongside the dock and loading into cars for direct shipment or for transferring the ore to a pit at the rear of machines where it is within reach of the bridge, to be rehandled and placed in storage piles. From these storage piles it may then be rehandled by the bridge and loaded into cars for transportation to furnace plants. The ore whether loaded into cars directly from the boat or by the bridge after having been in storage is handled through scale hoppers which weigh the ore accurately as it goes into the cars, so that a complete record of the ore handled either by the unloaders or by the bridge is made without the use of track scales. The unloaders are

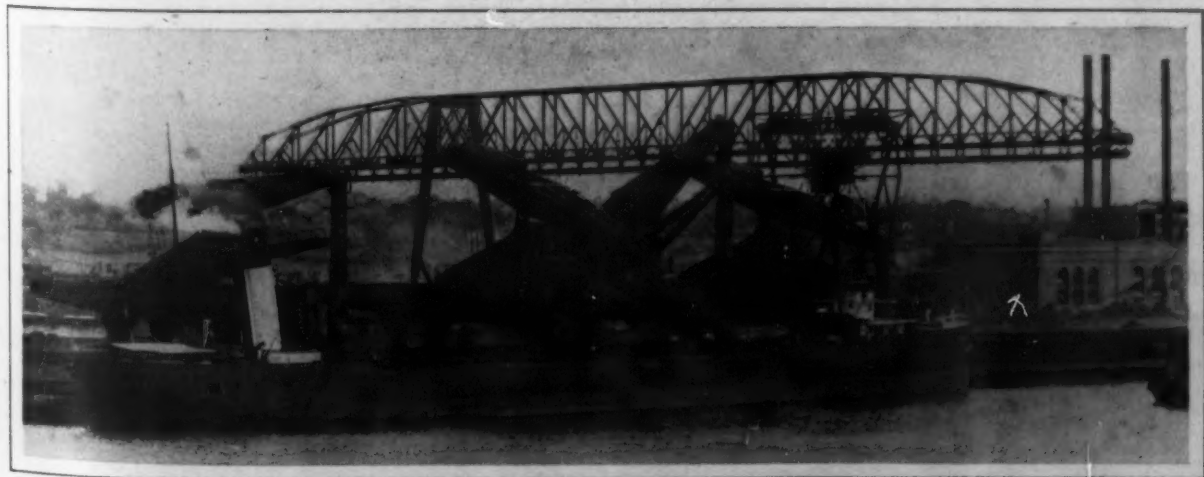


Fig. 4—View Showing the Unloaders in Operation and the Ore Bridge

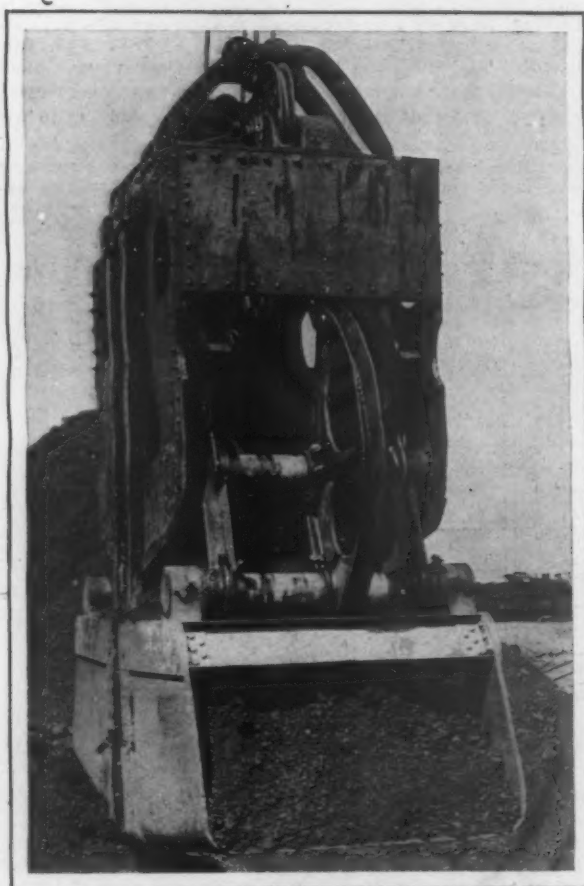


Fig. 5—A 17-Ton Hulett Bucket for Rehandling Ore in Connection with the Bridge

massive machines in every way. They consist of a heavy framework mounted on wheels, which travel along the runway rails next to the face of the dock. The runways of the machines are spaced about 71 ft. on centers, the main framework spanning four railroad tracks located beneath the machines. The rear end of the main framework is extended beyond the back runway a distance of about 57 ft., this back cantilever overhanging an ore pit into which the ore is discharged, to be later rehandled by the bridge and placed in storage.

After the 17-ton bucket, which is illustrated in Fig. 5,

is filled in the hold of the boat its contents are discharged into a 70-ton hopper which is supported on the main framework of the machine. This hopper has electrically operated discharge gates at the bottom. From this hopper the ore is discharged into a scale larry which travels on tracks suspended from underneath the main framework. The larry bin has a capacity of 50 tons of ore. This bin is carried on scales which have a recording beam in the operator's cab. After loading the scale larry from the 70-ton bin the larry operator, after weighing the ore, moves the larry over a car track upon which the cars are standing into which he desires to discharge the ore. The larry has gates at the bottom and the operator is able to discharge any amount of ore up to the capacity of the larry into the cars. If the ore is not going into cars for direct shipment, the larry is filled from the main hopper and discharged into the storage pit at the back of the machine from where it is rehandled by the bridge. The unloaders are electrically operated throughout, the current for the operation being taken by sliding shoes from the conductor rails arranged along the runway of the machines.

The 15-ton rehandling bridge which travels along the storage yard at the rear of the unloaders has a span of 266 ft. with 173-ft. overhanging cantilevers at each end, making a total of over-all trolley travel of approximately 581 ft. The bridge is carried on a tower at the forward end of the span and a shear leg at the rear of the span. The lower side of the bridge supports a runway for the bucket handling trolley. This runway extends the entire length of the bridge structure, including the span and the cantilevers. The trolley which carries the unloading bucket is of the self-contained type, having an operator's cab suspended from the trolley framework and in this cab are located the controllers for operating the different motions of the bucket. All of the ore from the pit at the rear of the unloaders is handled by this bucket and carried back into the storage piles under the cantilever and span.

When the ore is required from this storage it is rehandled by the bucket and discharged into a receiving hopper built into the framework of the main tower. This hopper has a capacity of 75 tons of ore and has discharge gates at the bottom for dumping the ore into a scale hopper located beneath these gates. This hopper is suspended from the tower directly over the loading track and its bottom has gates which are similar to those used on the scale larry of the unloader.

The bridge trolley has a hoisting speed of 175 ft. per min. and a cross travel speed of 600 to 800 ft. per min. The travel of the bridge along its runway is 50 to 75 ft. per min. When operating at these speeds the bridge will handle approximately 1000 tons per hr.

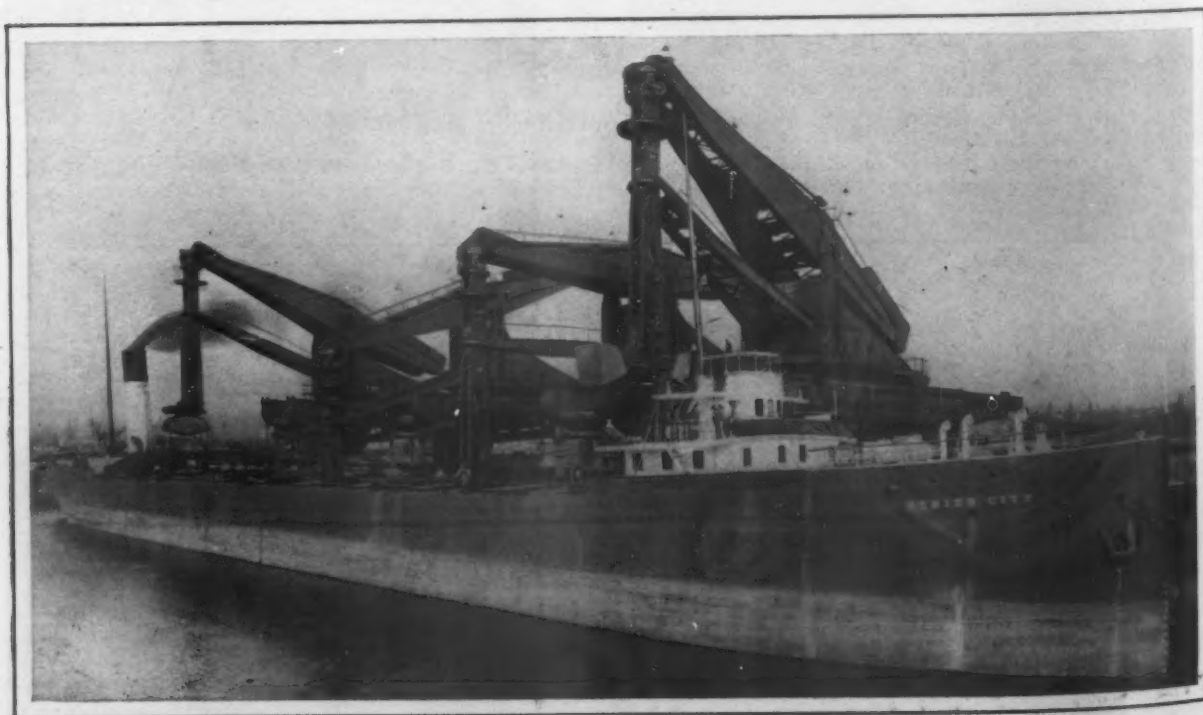


Fig. 6—Battery of Four Hulett Ore Unloaders in Operation



## An 84-In. Sawing Machine

### Details of the Largest Machine of Its Kind Ever Built

The completion of a cold saw cutting-off machine, carrying an 84-in. saw blade, marks an epoch in the long construction record of this class of machines by the Newton Machine Tool Works, Inc., Twenty-fourth and Vine streets, Philadelphia, Pa. It is the product of 23 years' experience in the designing and building of this class of equipment, representing the building of over 2500 cold sawing machines, for 1200 customers, in this and foreign countries, including forges, steel foundries; locomotive, structural, bridge and general machine shops and American,

of length to width of 4 to 1. The feed screw is located as near to the direct line of stress as is consistent with practical design with provision for protection, being placed between the guide shears B, and the bronze feed nut is located at C as near a pulling position as possible, which feature also assists in overcoming the saddle twist. Geared feeds give an advance of from 0.34 to 5.55 in. per min. to the spindle saddle, while the length of the spindle saddle traverse on the shears is 34 in. All bearings for parts having opposed stresses, the spindle D, the pinion shaft E, the driving wormwheel shaft E and the driving worm shaft F are cast solid to preclude the possibility of chatter. At both ends of the bearing F auxiliary bushings are fitted to and revolve with the driving shaft to prevent the escape of oil and protect the stationary bushings from wear through contact with the splines, and there are adjustable thrust shoulders at both ends.

As can be seen from Figs. 1 and 3, the machine base is of massive, rigid, box type design, with the work table bolted on for convenience in transportation. The extension for the feed and rapid traverse mechanism is cast solid. The work table is of massive rigid construction with the oil pan cast solid and arranged with parallel and right angle T slots. Tongues on the V-block, in which the work is held, engage the slot G, Fig. 1, to take the thrust of the cut. This work table is 60 in. wide and 88 in. long. After the machine is located on its foundation the table clearance is cut by the saw, and this slot will be seen at H, Fig. 3. There are available six changes of positively clutched gear feed with automatic release, actuated by the trip I,

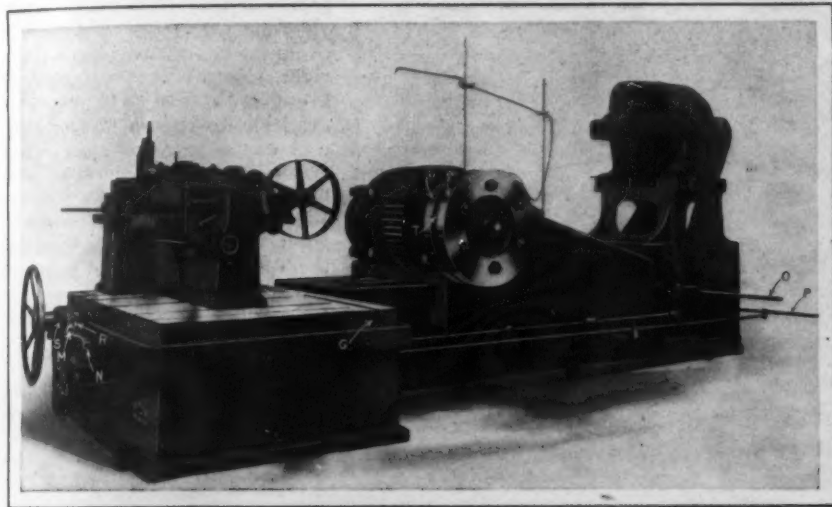


Fig. 1—The Largest and the Smallest Cold Metal Sawing Machines Built by the Newton Machine Tool Works, Inc., Philadelphia, Pa.

European and Asiatic navy yards and arsenals. As far as the makers' knowledge goes, this machine is the largest of its type in the world and represents a long step from the first spindle-driven, cold metal sawing machine in America by this firm, which was furnished the Midvale Steel Works, Philadelphia, in 1889. A striking contrast is shown in Fig. 1, which illustrates the present type of the smallest machine now built by the company, a 20-in. blade machine, weighing 4000 lb., mounted on the bed of the 84-in. machine, and gives some idea of the immensity of the latter.

The machine is designed to carry an 84-in. saw blade, having inserted removable teeth of high speed steel, with a capacity to saw through steel billets in one cut up to 25 in. in diameter, at a constant feed of 2 in. per min. and this represents the highest development on the theory that greater economy is effected in operating one saw blade to its highest efficiency rather than multiple saw blades in units at slightly lower rates of output. With the exception of the bronze driving wormwheel, all gears, pinions, shafts, feed screws, etc., are of alloy steel and all bearings are bronze bushed. The thrust of the driving worm is taken by Standard Roller Bearing Company's roller bearings. These bearings are also used on both ends of the feed screw, as it is always operated in tension.

The saddle, Fig. 2, weighs 17,900 lb. and has square lock bearings on the base with underlocking gibs cast solid and adjustments made by taper shoes at AAA. There is a full bearing on the base 8 ft. long on each of the three shears and 48 in. wide over all, but to eliminate power loss occasioned by twisting and consequent binding of saddle on shear sides, the alignment is controlled by the adjacent shears B, giving a ratio

engaging the stop J, which can be set for any desired depth of cut within the limits. Reversing fast power traverse is available through a double train of friction clutched bevel gears, covered at L. In testing this machine it developed that the power control was so easily and accurately manipulated and so safe that the handwheel was unnecessary.

Except the forward fast traverse motion, movements can be controlled from the front or rear of machine by the levers M-N and O-P, Fig. 1. As insurance against accident through the thoughtless engagement of the forward fast traverse motion, a lock pin, R, must be released before the lever M, controlling this motion, can be moved, and further a spring lock is located in the bracket at S between the levers M and N, which prevents absolutely the engagement of opposed motions at the same time.

The Barth system of keying is employed throughout, which is a particular advantage in driving the saw blade. Two keys are mounted in the nose of the spindle in the

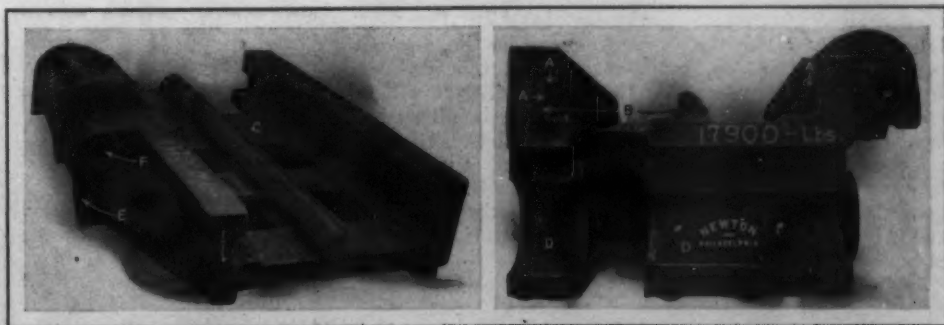


Fig. 2—Two Views of the Massive Saddle of the Machine

space T; these have combined straight and angular faces to insure their proper seating and prevent rocking. The inner end of each key has a large flange entering into the solid spindle flange U. The outer flange W, which clamps the saw blade in the space T fits the spindle nose on which

the blade is located accurately, and also has provision for a key fit. The bolts shown on the face serve only to hold the clamping flange to the spindle and do not intersect the blade. To insure ample bearing surface on the necessarily narrow blade extra plates are riveted to each side of the blade.

The saw fit on the spindle nose is  $2\frac{3}{4}$  in. in diameter, the spindle is 16 in. in diameter and the spindle driving spur gear is approximately 37 in. outside diameter with a

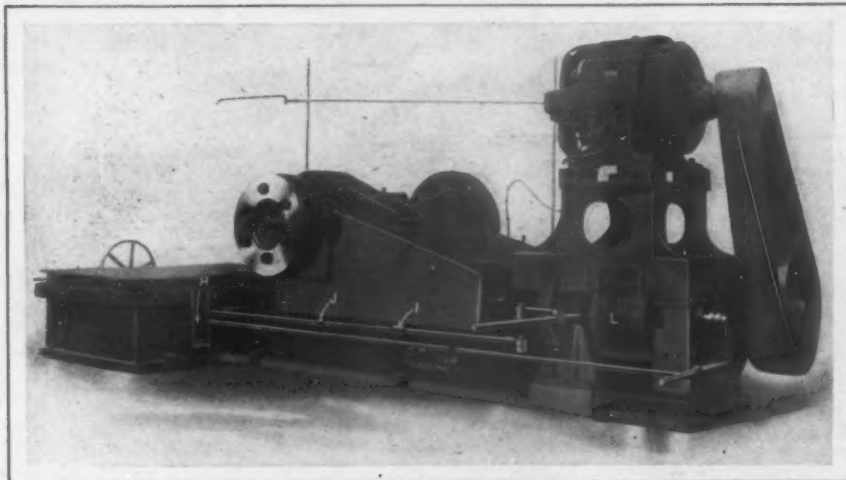


Fig. 3—The Driving Side of the Machine Showing the Feed Control Mechanism

12-in. face and  $1\frac{1}{2}$ -in. pitch teeth. The spindle itself weighs 5500 lb. The pinion teeth are cut from the solid wormwheel shaft and the driving wormwheel, having a steel center and bronze ring, fits at its full diameter. The pinion shaft weighs 2000 lb.

This machine is driven by a General Electric type RLC, No. 205 frame, 230-volt, 35-hp. motor running at speeds of from 300 to 900 r.p.m. The motor bracket is high to give a long belt center and has the motor guides cast solid together with the lugs for the adjusting screws by which the belt is tightened. Motion from the motor is transmitted to the 40-in. driving pulley, which has a face 13 in. wide by a 12-in. double chrome leather belt. The motor bracket also serves as a cover for the operating mechanism.

Cups are provided throughout for oil and for inaccessible parts, or where the operator might be exposed to danger in oiling while the machine is running, stand pipes are provided. The equipment also includes pump, piping and attachments for lubrication.

Smaller recently built machines of a similar design are each operating two 40-in. blades in unison daily, at an average feed or saddle advance of 2 in. per min. and with a peripheral speed of 48 ft.

The 84-in. machine weighs 75,000 lb., not including the motor, and occupies a floor space 8 x 24 ft.

The Champion Rivet Company, Cleveland, Ohio, awarded a contract August 20 to the Worden-Allen Company, Milwaukee, Wis., for the erection of steel buildings for its new Western plant to be located at East Chicago, Ind. The company announces that the Cleveland plant will be maintained, but that the East Chicago works is intended to handle orders for shipment to Western points. The machinery for the new plant has been assembled at the Cleveland works. The buildings for which the contract has just been placed will constitute the first unit of the new plant, and it is expected to add additional manufacturing capacity as business develops.

The Borah investigation of the conditions under which workmen in the steel plants of the United States Steel Corporation are employed was completed in Chicago August 23. The inquiry has been in progress for nearly two years by the Department of Commerce and Labor at the direction of the Senate. For six months investigators under Lucian W. Chaney have been seeking information at the plants in Chicago and Gary. The statistics include the wages paid workmen and the hours they work.

## New Cone Type Milling Machine Right Hand Control and a Special Back Gear Arrangement. Two Special Features of the Latest Le Blond Product

A recent development of the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, is a line of heavy cone type milling machines which are built in both the plain and universal styles and range in size from No. 0 to No. 4, the last being the one illustrated. As will be noticed from the accompanying engravings, the machine is symmetrical and rugged in construction. A distinctive feature of the tool is that it is essentially a right-handed design. The location of all the controlling levers on the right side of the machine and grouping them so as to have them available for right-hand manipulation was determined upon as the result of a study of productive and non-productive movements. Fig. 1 is a view of the No. 4 size, while views of the feed box with the cover in place and removed are given in Fig. 2.

As will be noticed from Fig. 1, the column is a one-piece symmetrical box casting and is integral with the base. The combining in one piece of these two parts as well as reinforcing the column by ribbing was decided upon with a view to transmitting the strains resulting from heavy milling operations through the vertical walls to the base of the machine and of a stress distribution which it is pointed out is possible only with a unit column construction. The back gears mark a somewhat interesting development from the standpoint of the advantages possessed by them over the old sliding gear design. A conventional eccentric shaft arrangement throws them in and out of engagement and they are mounted on a semi-steel quill at a low duty point and are alternately clutched to the back gear shaft by a powerful friction in the hub of either gear. This friction consists of only three parts, a hardened steel double taper key, a plug of the same material having an acute taper and a cast-iron friction ring. The key is drawn against the plug which expands the friction ring in the gear hub. The ring is snapped over the hub to prevent any drag when the clutch is released so that the lever may be used for starting and stopping. The change from a high to a low ratio can be accomplished while a cut is being taken and any desired driving tension can be secured for regulating the tension of the lever.

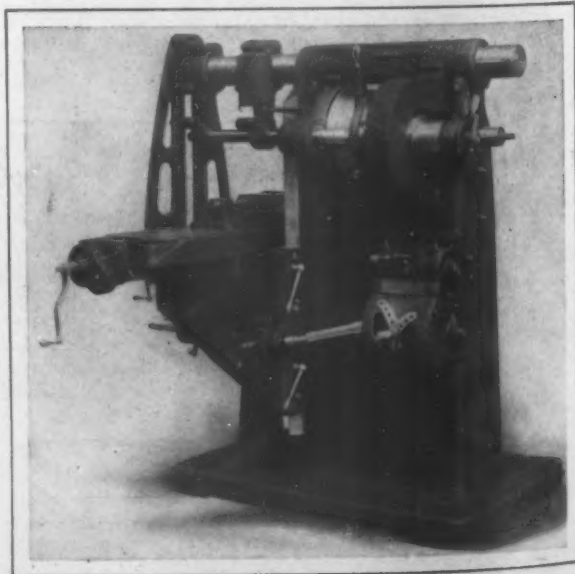


Fig. 1—The No. 4 Heavy Duty Cone Type Milling Machine Built by the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio



The spindle is made from a 0.60 per cent. carbon crucible steel bar and has a specially designed set of bearings. The front bearing is formed by pressing a hardened steel taper bushing over the spindle and running it in a special cast-iron box that is drawn into the column by a nut on its rear end. In this way the journal will soon acquire a high polish as a result of the contact with the hardened steel spindle and the bearing friction is practically negligible. The rear bearing is a bronze mixture which is straight in the journal, but is tapered on the outside so that it can be drawn into the column to adjust for wear. Large cored pockets are cast under each bearing from which the oil is drawn by a piece of felt introduced into each box to supply the bearing with a capillary filtered flow of lubricant. This arrangement, it is pointed out, causes the bearing to be lubricated in exact proportion to the speed as an increase in the speed causes an increased capillary attraction and results in a freer flow of the lubricant. The steps of the cone pulley are very large and are designed for a wide belt operating at ordinary speeds. The speed of the countershaft is so proportioned that a shift from the high speed to the low speed is always intermediate to a shift of the cone pulley belt. This arrangement enables the countershaft speeds to be kept close together so that on slow speeds, where the most power is required, the countershaft is operating at a high speed, maintaining a high belt velocity and a high initial torque. Another advantage of this arrangement is that the 18 spindle speeds can be secured in succession with but 8 shifts of the belt.

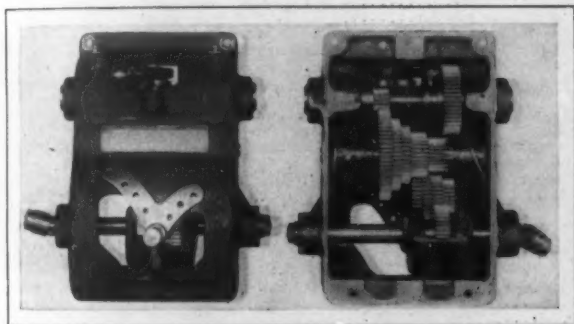


Fig. 2—Two Views of the Feed Gear Box Employed

The feeds are all driven from a single self-contained feed unit, attached to the side of the column, its position being clearly shown in Fig. 1. The initial drive is from a gear of the proper pitch and diameter to secure a reasonable surface speed. This gear is mounted on the cone pulley so that a change in the driving ratio effects a corresponding change in the feeds. Three speeds are given the initial shaft. The first of these is with the open belt drive, the second with the low ratio back gear and the third with the high ratio gear engaged. The box is controlled by two levers, the lower advancing the changes in small steps and the upper one compounding them for the coarse feeds. Combinations in the box provide 16 changes which are multiplied by the three speeds of the initial shaft, thus giving 48 rates of traverse, advancing in small increments. The feeds are inversely proportioned to the speeds, thus obviating speeds that are detrimental to the box. On the high spindle speeds the box is driven with a pinion and when heavy cuts are being taken, necessitating large cutters and coarse feeds, the box is driven from a large gear, increasing the speeds about 8 times. The gears which are shown in Fig. 2 are all cut from crucible steel bars and are meshed by peripheral and sliding engagement. The sliding gears have rounded teeth which facilitate engagement, and the tumbler gears have a pointed tooth with a heavy root section. The transmission from the spindle through the knee is a straight spur gear train, the box being locked in its set-up for each feed so that it is impossible for the gears to crowd out of mesh while the cut is being taken.

The knee is a full box section reinforced by lateral and transverse ribbing to resist torsional and other strains. The openings have been made as small as possible and it is pointed out they are so placed as not to impair its strength. The arrangement of the ribbing employed for

reinforcement divides the casting into a series of box section compartments. The cross feed screw is in the center of the knee so that no unbalanced strains are created in working against the thrust of the cutter and the cross travel is unrestricted by cramped binding action. A heavy and rigidly ribbed casting that occupies as little vertical space as is consistent with the rigidity required is used for the saddle. The knee and the saddle are both fastened in their respective positions by the binder handles that bring the double angled gibs into action, thus drawing the parts together and against their solid angles, while at the same time continuous metal to metal contact is secured. The table is a semi-steel casting of great vertical depth. It possesses great strength and acts as a beam to resist the buckling when work is clamped to it and the table bearing extends the entire width. The top of the table and the metal around the T slots is very dense. An oil pan is cast completely around the table and at the ends a pad is cast in the rim for mounting the dividing head, an arrangement which it is pointed out increases the capacity between centers at least 8 in. The feed screw is cut from 0.50 per cent. carbon crucible steel bar and has a lead of 0.4. In this way it is emphasized a greater driving angle is secured for the threads than would be the case with a finer pitch screw, and a smooth feed under a heavy cut is insured.

The universal shaft transmits the power to the feed trip and reverse box through a pair of accurately cut spiral gears to the spur gearing of the knee. The feeds are tripped within micrometer limits by a single plunger trip with a direct lever arm action. In this way the trip is not carried through any gear trains, in which it is pointed out some lost motion is bound to exist, and acts directly upon the releasing levers and drops into neutral position when tripped. Depressing this lever feeds the table to the right, while elevating it gives a movement in the opposite direction. The trip and reverse box is of very simple construction and is controlled by a single lever. The overarm is a solid steel bar accurately ground to size and the brace is a single piece slotted casting, which has been designed to resist the transverse strains to which it is principally subjected.

### Modern Welded Steel Pipe

The National Tube Company, Frick Building, Pittsburgh, has issued a most attractive booklet of 32 pages devoted to the manufacture of modern welded steel pipe. Illustrations are given of the different processes in the making of pipe from the mining of the ore on the Mesaba range and its treatment in the blast furnace to the Bessemer steel converter and finally the rolling of the steel plates into pipe. Tables of bursting tests of commercial tubes and pipes are given, also twisting tests, while several pages are devoted to the subject of the proper dies to be used in the cutting of threads. A table is also presented giving a summary of the results of investigations of the corrosion of iron and steel pipe in actual service. To readily identify National material, and as a protection to the company itself and its customers, it is the practice of the National Tube Company to roll in raised letters of good size, on each few feet of every length of welded pipe, the name "National."

### Production of Fluorspar in 1911

The total quantity of domestic fluorspar reported to the United States Geological Survey as marketed in the United States in 1911 was 87,048 net tons, valued at \$611,447, compared with 69,427 tons, valued at \$430,196 in 1910. The production in 1911 was the largest ever recorded, and was due largely to the ability of American producers to meet the demand more nearly than heretofore and to produce a better and more uniform grade of gravel spar than can be obtained by importation. Deposits of workable size are not abundant, those thus far exploited in the United States being found only in the States of Arizona, New Mexico, Colorado, Illinois, Kentucky, Tennessee and New Hampshire. It is estimated that about 80 per cent. of the American fluorspar output, mainly in the form of gravel spar, is consumed in the manufacture of basic open-hearth steel.

# Two-Stage Electric Smelting of Iron Ores

Unusual Recent Results with the Johnson Zinc Furnace, Experience with Which Suggests a Departure from Present Practice with Iron

BY WOOLSEY M'A. JOHNSON

In *The Iron Age* for May 2, 1912, were given a short account of the present backward state of zinc smelting and some figures and facts of the experimental work at the Hartford, Conn., plant of the Continuous Zinc Furnace Company, which is developing the Johnson process of electric zinc smelting. It was shown that the 50-lb. retort making some 20 to 25 lb. of spelter per day is an anachronism in the present age, and that the rationale or underlying principle of the Johnson process lay in the development of a unit of continuous action and capable of expansion to modern large units so that all the savings of mechanical appliances and of scientific control used in the metallurgy of copper, iron and steel could be effected.

It was pointed out that the reduction in the smelting zone of the Johnson furnace lies between that of a lead

blast furnace and that of an iron blast furnace and that the process differed from the present zinc process in that carbon was added in just sufficient amounts to effect the proper degree of reduction, and that a slag, an iron-copper matte and a base lead bullion containing precious metals were made. The process consists of roasting sulphide ores down to 3 to 6 per cent. sulphur, mixing them with suitable coal and fluxes, and charging into a preheater, and from it red hot into a continuously operating electric smelting furnace. In the article referred to it was pointed out that the production of carbon dioxide in the smelting zone would oxidize the zinc vapor as it condensed in the condenser, with the resultant formation of blue powder, were not the gas passed through an electrically-heated filter of incandescent coke.

The report, which is detailed below, shows that by running the furnace under certain conditions it is possible to reduce over 97 per cent. of the zinc oxide without affecting the reduction of the scorified iron protoxide. In the year 1905 some experiments continuing an earlier line of work were made on the relative affinities under various conditions of Zn, Fe, C, O and S, and the experimental data then obtained have been the foundation of our present results.

## METALLURGICAL BALANCE SHEET OF RUN 4, E. F. 19.

Ore.....	2840 lb. dry, at 39.0 per cent.....	1108 lb. zinc
Flue dust...	300 lb. dry, at 56.7 per cent.....	170 lb. zinc
Total delivered to preheater.....		1278 lb. zinc
Zinc in spelter.....	691 lb. at 97.1 per cent.....	670.0 lb. zinc
Zinc in blue powder.....	32 lb. at 96.0 per cent.....	30.8 lb. zinc
Zinc in flue dust.....	280 lb. at 68.6 per cent.....	192.0 lb. zinc
Zinc in slag.....	1359 lb. at 2.49 per cent.....	34.0 lb. zinc
Zinc in charge not smelted and found in furnace...	81 lb. at 50.5 per cent.....	20.7 lb. zinc

Total accounted for..... 947.5 lb. zinc  
Unaccounted for, lost in "dusting" in charging preheater and electric furnace, and in "soakage" of furnace (As next run gave a "plus" recovery, "soakage" was the largest of these items)..... 330.5 lb. zinc

As good a metallurgical "cut-off" as possible was made. The loss by volatilization was practically nil. The slag analyzed as follows:

	SiO <sub>2</sub>	FeO	Zn	ZnO	Pb	Cu
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
No. 1.....	39.2	15.5	1.90	2.38	Less	Less
No. 2.....	39.0	14.3	2.04	2.51	than	than
No. 3.....	32.2	23.3	2.50	3.13	0.05	0.05
No. 4.....	27.5	27.0	3.50	4.31		

The ore analysis was as follows: SiO<sub>2</sub> (approx.), 8 per cent; FeO, 15.4 per cent; Zn, 39 per cent; CaO, 5.2 per cent; MgO, 1.07 per cent; Cu, 0.59 per cent; Pb, 8.7 per cent; S, 3.7 per cent; Alk., 3 per cent.

Most of the analyses were made in duplicate and a second chemist checked the FeO and ZnO determinations.

Time of smelting.....	48 hours
Kw.h. on phase A.....	1754
Kw.h. on phase B.....	586

Both	2340
Ave. volts.....	Phase A 41.3 Phase B 19.9
Ave. amperes.....	Phase A 1200.0 Phase B 440.0
Ave. kw.....	Phase A 36.6 Phase B 12.2
Ave. power on both phases.....	48.8 kw.

Kw.hr. per lb. spelter.....	2340 / 691 = 3.39
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Kw. hr. per ton pay charge.....	2340 / 3140 × 2000 = 1490
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Lead and matte were not tapped out. Runs have been made giving much better results than this, but this run is different in that the furnace operated on new conditions and made a new slag high in FeO and relatively low in silica. The slags are higher in FeO and lower in ZnO than any the Continuous Zinc Furnace Company ever made either in a smelting furnace or in a research furnace.

In this connection, it might be said that this test, though apparently of little commercial promise, is the one in which the writer has an especial pride. It is true that the furnace has given results much more satisfactory from a standpoint of actual metallurgical returns; but in the fact that the large-scale results are better than laboratory results lies its value as exhibiting the powerful metallurgical effect of the electric current.

## Electric Smelting of Iron Ore

While slags high in iron oxide have been made, slags containing less than 0.20 per cent. FeO have been produced.

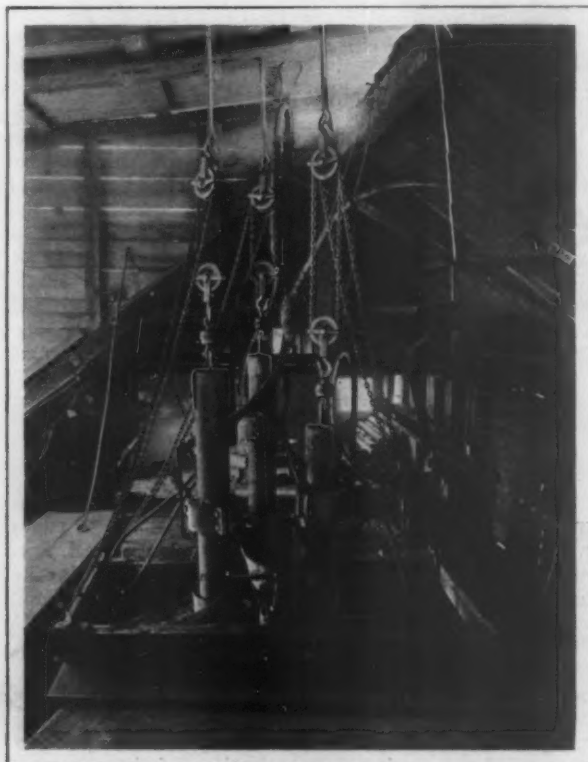


Fig. 1—View from Charging Floor of Johnson Furnace for Electric Smelting of Zinc Ores

blast furnace and that of an iron blast furnace and that the process differed from the present zinc process in that carbon was added in just sufficient amounts to effect the proper degree of reduction, and that a slag, an iron-copper matte and a base lead bullion containing precious metals were made. The process consists of roasting sulphide ores down to 3 to 6 per cent. sulphur, mixing them with suitable coal and fluxes, and charging into a preheater, and from it red hot into a continuously operating electric smelting furnace. In the article referred to it was pointed out that the production of carbon dioxide in the smelting zone would oxidize the zinc vapor as it condensed in the condenser, with the resultant formation of blue powder, were not the gas passed through an electrically-heated filter of incandescent coke.

## Details of an Unusual Run

The writer takes pleasure in giving in the columns of *The Iron Age* data on the most remarkable run that his nine years' experience in electric zinc smelting has ever produced.



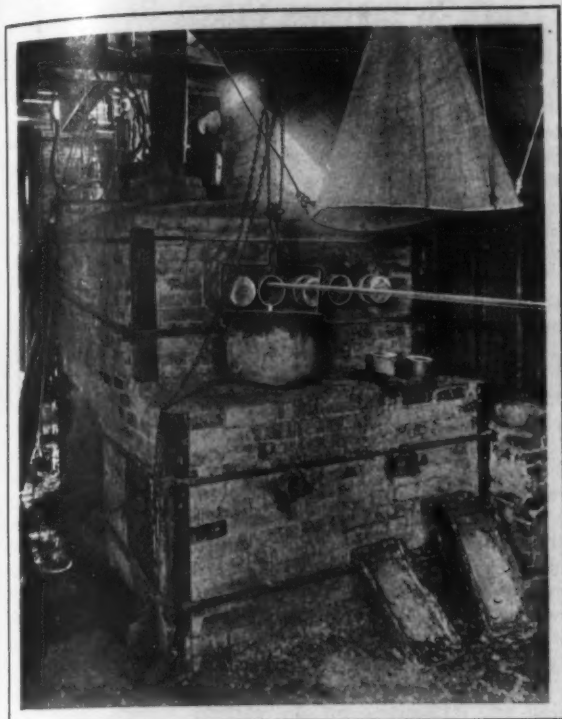


Fig. 2—Tapping Spelter

duced, making a matte so high in iron as to approach in character a pig iron. The writer has had some practical experience in the treatment of zinc ores when connected with a large zinc company. He has, however, little practical knowledge of the iron blast furnace. From what study he has given it and from second-hand knowledge gained from talks with W. R. Walker, J. E. Johnson, Jr., Prof. J. W. Richards and others, he has reached the opinion that in the light of his practical work in the reduction of roasted ferruginous zinc ores, the commercial experiments conducted abroad and in this country in the electric smelting of iron ores are not directed along the proper lines.

In 1902 the writer commented as follows: "In regard to the making of steel by electro-metallurgical means, I would say that the person who attempts it competes against a 'steam-shovel' proposition. A very large part of the iron ore comes from the shores of Lake Superior, is mined by the steam shovel, is very high grade, and consequently the cost of mining, per pound of iron turned out, is very low. In the case of magnetite, I believe Mr. Ruthenberg intends to treat clean ores. In that case, the cost of mining and crushing is all multiplied by two or three, and sometimes by four or five, according to the percentage of iron in the ores. Therefore, it seems to me that any electro-metallurgical process of making steel can only be successful provided the article which is made is so much better that it compensates for its higher cost. For instance, if the steel is made very hard and free from blowholes, and has no dissolved gases in it, it has a physical texture which might compensate for its higher cost. Ordinary steel, made very cheaply, is good enough for most purposes, and steel made electro-metallurgically must be of the grade of crucible steel. Otherwise the process has no economical value." (Transactions of the American Electrochemical Society, Vol. II, pp. 99-100.)

These remarks had at that time a considerable element of truth, as subsequent events have proven. The development of electro-metallurgy has been so great that it is believed by the writer now that the electric furnace smelting iron ores will have in the next decade a somewhat wider field than it is thought generally to possess at present. It would seem that the proper way to smelt iron ores is to make the operation in two or more stages, the first stage or stages using a type of pre-heater somewhat similar to the Continuous Zinc Furnace Company's, which has two distinct steps. From this the reduced mass is discharged into an electric furnace of a type similar to the Hartford electric zinc furnace, which has been described by an eminent metallurgical engineer as "all hearth and bosh." This belief has grown in the past few years from an off-

hand opinion to a more or less firm personal conviction. Any chance that such a metallurgical proposition would have is conditioned upon the production of a uniform quality of pig iron possessing better commercial properties than do present brands.

Now, the spelter produced electrically at Hartford has been found to possess much better commercial properties than do the ordinary brands, even though no particular attempt has been made to produce a spelter of any definite superiority. In fact "E-Z" spelter has replaced in one brass foundry higher priced spelter. The writer, from his experience, believes that applications of the electric current in the metallurgical industries are sure to be more numerous as civilization progresses. This statement is founded on his observation that the exact control of all conditions possible when electric heat is rightly applied produces unlooked-for results and products of high quality. In short, electrothermic metal is found to have often many unexpected points of commercial superiority. It is also founded on the self-evident fact that high-priced, intelligent labor can be employed efficiently and economically in electric smelting operations.

### An Interesting German Rolling Mill Engine

What is said to be the most powerful Stumpf mid-cylinder exhaust type of engine has been in use at the Rombacher Iron Works, Germany, since February, 1912. This unit will develop 2400 hp. and has a cylinder diameter of 43 in. and a stroke of 52 in. The speed is remarkably high for this type of engine, namely, 120 r. p. m., which gives a piston speed of 17.2 ft. per sec. The engine is used to drive a 24-in. rolling mill and is coupled directly to the shaft. This engine is well adapted to this class of work by reason of its uniform steam consumption over a wide range of load, and is claimed to be much more economical than a compound engine in this respect. The regulation is very exact and no appreciable drop in speed can be detected even with the heaviest loads, nor can any over-speeding be discovered when the load is suddenly removed, a fly wheel weighing 70 tons being employed in connection with the engine. Very little attention is required by the engine on account of the simplicity of its construction, and the lubricating oil consumption is said to be less than that of other engines.

At a recent meeting of the stockholders of the Craig Foundry Company, Bucyrus, Ohio, the resignation of Walter Kline, secretary-treasurer, was accepted and A. M. Jones was elected to fill the vacancy.

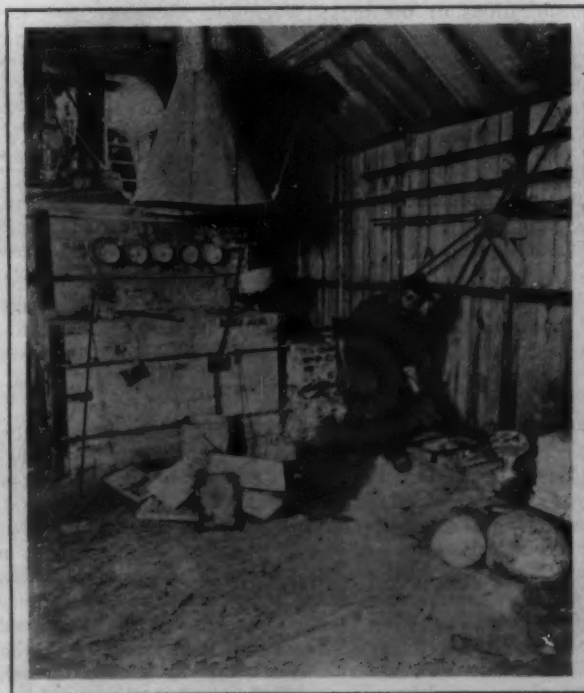
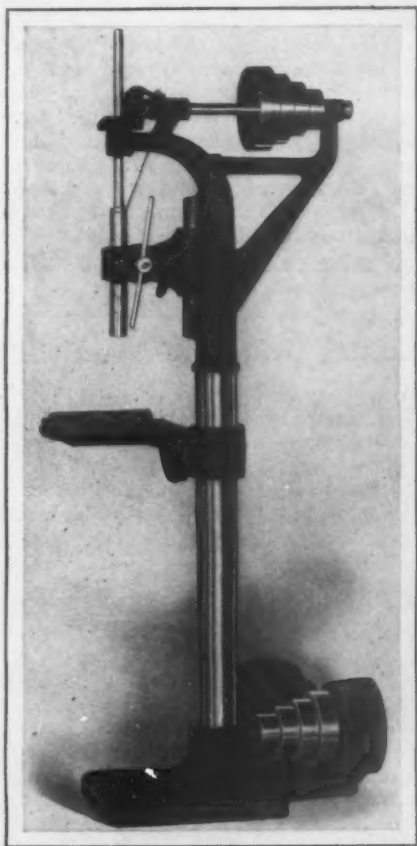


Fig. 3—Casting Spelter

## Powerful Motor-Driven Drilling Machine

An improved design of motor-driven drilling machine, which although very powerful can be operated as conveniently as a sensitive drill, has been brought out by the Rockford Lathe & Drill Company, Rockford, Ill. A high-carbon steel forging finished by grinding is used for the spindle which is fitted with a ball-bearing thrust and is counterbalanced either by a weight and chain or a quick



A New Motor-Driven Drilling Machine Built by the Rockford Lathe & Drill Company, Rockford, Ill.

return spring. The tilting table can be clamped at any angle and for convenience in keeping the piece in place an angular bracket is also furnished.

The following table gives the principal dimensions and specifications of the tool:

Distance from column to center of spindle, in.....	7 1/2
Diameter of largest hole drilled, in.....	3/4
Diameter of spindle, in.....	1 1/2
Diameter of sleeve, in.....	1 1/2
Vertical travel of spindle, in.....	5 1/2
Morse taper of hole in spindle.....	No. 2
Maximum distance between spindle and table, in.....	35
Vertical adjustment of head, in.....	9
Size of table, in.....	11 x 11
Diameter of largest cone pulley step, in.....	7 3/4
Diameter of smallest cone pulley step, in.....	3 3/4
Face width of cone pulley steps, in.....	1 1/2
Net weight, lb.....	355
Shipping weight, lb.....	370

A 1/2-hp. motor which can be furnished to run with either direct or alternating current of any required voltage is employed for driving the machine, the power being transmitted to the lower cone pulley through a train of gears containing a rawhide idler.

**Fire Lessons That Should Be Heeded**—Two of the largest fires reported in June by the Boston Manufacturers' Mutual Fire Insurance Company occurred in properties not provided with automatic sprinkler protection. In both cases the lesson is very clear, and it is probable that in rebuilding sprinklers will be installed. More recently a fire in the new finishing building of the Hamilton Woolen Company, Southbridge, Mass., caused by the boiling over of a tar kettle used in laying a tar concrete floor, resulted in a loss of about \$2000. The contract had been let to the General Fire Extinguisher Company to install Grinnell automatic sprinklers in this building, but the sprinklers had not been put in at the time the fire took place.

## A New Steam Shovel Record

### The Loading of 8,100 Tons in a Ten-Hour Shift

DULUTH, MINN., August 24, 1912.—When 180 steel ore cars were loaded by one machine in a ten-hour shift at the Steel Corporation's Leonard mine in the Chisholm district of the Mesaba range, all steam shovel records of that nature were broken. The ore was loaded directly from the pit. The cars were each of 45 tons capacity, making the aggregate of the day's work 8100 tons. The previous record, also held by a Steel Corporation mine, was made in the Coleraine district when 160 cars were loaded in a like period. The Leonard is one of the Hill properties, the lease of which will be canceled January 1, 1915.

While the contract may not be awarded for some weeks or months, the Arthur Mining Company, organized to operate the Great Northern ore holdings, is planning the stripping of an additional property. This tract adjoins the Mesaba Chief near Keewatin, and its stripping will be one of the biggest jobs of the kind ever undertaken on the range. It is estimated that the removal of 13,000,000 cu. yd. of overburden will be required. Stripping contractors anticipate a busy season next year. Besides the work on the Great Northern properties, the stripping of three already being in progress, the cancellation of the Hill leases will necessitate the stripping of some new properties by the Steel Corporation. Little new work of this kind has been done by the corporation this year.

The Steel Corporation has started the work of developing two properties on the eastern Mesaba, both near Mesaba station on the Duluth & Iron Range road—the Graham and the Vivian. The former will be a steam shovel and underground mine. The depth of surface is from 40 to 50 ft. The Vivian will be a shaft property exclusively, the overburden being too deep to make stripping practicable. Both mines will ship next season.

There is not an exhausted open pit mine on the Mesaba, though many of the older properties have been worked for years. At one time the Mountain Iron was believed to be exhausted and the shovels were taken from the pit. Test-pitting, however, showed additional deposits under the taconite and the Mountain Iron is still one of the largest of the Mesaba producers.

In the Nashwauk district of the Mesaba, the Hawkins mine of the International Harvester Company is employing a larger force of men than at any time since it was opened nine years ago. It will ship in the neighborhood of 800,000 tons of ore this season. Much of this will come from the washery erected last winter, which has proved a decided success.

## Molders and Machine Operators in Foundries

Thomas D. West, 10511 Pasadena avenue, Cleveland, Ohio, is to read a paper before the New England Foundrymen's Association in October on "The Loss of Art and Skill in Founding." Mr. West, from his study of the foundry labor situation, believes that a great handicap to recruiting the ranks of skilled molders is the common assertion that the molding machine is to a great extent dispensing with the services of the molder. He desires to obtain data on this subject in the belief that the foundry interest at large will be benefited by knowing the facts. He asks that firms engaged in the production of gray iron, steel, brass and malleable castings send him, before September 25, the data called for below, in respect to their individual shops:

1. Class of metal and character of castings made.
2. Number of molders making castings by hand methods.
3. Number of employees making molds by operating machines.

In the paper Mr. West is preparing no names of firms will be mentioned, but the individual figures given him will be used to form a total.

The Terry Steam Turbine Company, Hartford, Conn., has given Yarrow & Co., Ltd., Glasgow, Scotland, the exclusive right to manufacture Terry turbines for forced draft work in Great Britain. After the steam was shut off, with no vacuum and no load, a Terry turbine driven generator set recently ran 10 min. and 45 sec.



## An Improved 24-in. Shaping Machine

In response for the demand for a design of machine tool for the more modern uses of high-speed steel in steel mills and railroad and drop-forging shops, Gould & Eberhardt, Newark, N. J., have recently designed a new type of 24-in. shaping machine to which the name *Invincible* has been given. As compared with the builders' previous standard machine, the new design possesses several improvements. These include the raising up of the main bull gear which it is said greatly increases the machine's mechanical efficiency, an increase in the outside diameter of the bull gear hub, the use of large V bearings and a solid-top main lever, the reduction to a minimum of the shafting overhang of the crank pin, the taking of crank-pin thrust by solid walls in the bull gear, an increase in the ratio of the gear drive, a heavier front table support and in general a more massive construction.

The center of the bull gear hub has been brought  $\frac{1}{4}$  in. nearer the ram than in its present position in the standard 24-in. machine. As the position of the fulcrum of the lever has not been changed, it is emphasized that the work arm of the main lever has been lengthened in relation to the load arm and thus the mechanical efficiency of this reciprocating lever has been greatly increased. This lever transmits power to the ram through the crank pin located on the main bull gear and by reason of the change in the position of the bull gear hub center, it has been necessary to reconstruct the bull gear. In this reconstruction the external diameter of the hub has been increased from  $\frac{3}{4}$  to 6 in.

The change in the construction of the V bearings includes an increase in the angle of 10 deg., or from 45 to 55 deg. This, it is pointed out, gives an angle which is better able to withstand the horizontal strains of the ram, while the advantages of this type of bearing for withstanding vertical strains will still be maintained. In addition to the change of angle the amount of bearing surface has been increased so that the alignment and accuracy of the ram will be preserved. Another feature of this new construction of the V gib bearing is that it permits a solid metal construction on both sides of the ram bearing. A tapered gib that is in two parts, each of which may be adjusted from the side near either the front or the back independently of the other is thus provided. Set-screws in an upward direction between the ram bearing and the solid bearing in the frame provide the means of adjustment and give a solid metal construction bearing for the ram in all positions. This, it is pointed out, does away with the necessity of having bolts or straps take the strains of the ram.

To strengthen the main lever the customary hole in the top of the lever, which is generally used when key-seating a shaft, has been removed, and another placed in one side of the frame through which shafts up to a maximum of 3 in. in diameter can be passed. In connection with the reconstruction of the main bull gear the builder has found it possible to reduce the overhang of the crank

pin with relation to its distance from the large gear hub bearing in the frame to a minimum. The amount of this overhang, it is pointed out, is less than is found in any other construction and further increases the efficiency of the crank pin under heavy cuts. The ratio of the builder's double train gear drive has been increased by giving a greater initial speed to the ram and increasing the ratio of the gearing. These ratios are 6.64 to 1 for the single gear and 32.06 to 1 for the back gear, which gives more power to the machine when running with either of these gears engaged. The front support to the table which was an original feature with this company has been redesigned so that the support clamp is now securely fastened to the support by two bolts instead of one. It is pointed out that this new support holds the table very rigid under heavy cuts and reduces vibration to a minimum. In addition to these improvements the head, ram and frame have been redesigned and more metal added and a number of improved methods for oiling the various moving parts have been incorporated.

The following table gives the principal dimensions and specifications of the machine:

Horizontal travel of table, in.....	28 $\frac{1}{4}$
Vertical travel of table, in.....	14
Greatest distance between ram and table, in.....	17 $\frac{1}{4}$
Vertical movement of tool head, in.....	8
Opening of vise, in.....	16
Length of vise jaws, in.....	14 $\frac{1}{2}$
Depth of vise jaws, in.....	3
Floor space required, in.....	106 x 50
Net weight, lb.....	4800
Capacity of case, cu. ft.....	125

In addition to being a very powerful tool, the shaping machine is conveniently operated by an automatic starting device with dynamic brake control. It is driven by a direct-connected 10-hp. Reliance adjustable-speed electric motor.

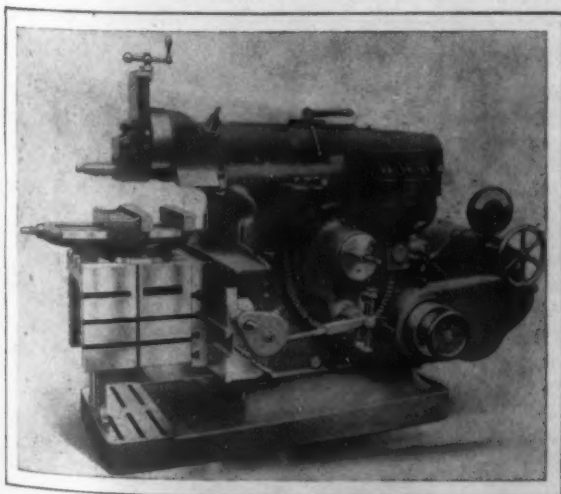
## Plymouth Binder Twine in a Record Shipment

The Plymouth Cordage Company of North Plymouth, Mass., and Welland, Ontario, manufacturer of Plymouth binder twine and rope, made a freight shipment the past week that is in many ways very unusual. The shipment, which consists of 600,000 lb. of Plymouth binder twine consigned to the company's Winnipeg selling agent, W. G. McMahon, is being dispatched in a solid through train run on practically passenger schedule. It left North Plymouth at 3.15 on the afternoon of August 21, arriving in Winnipeg August 23, via the New York, New Haven & Hartford, Boston & Maine and Canadian Pacific railroads. Each car carried about 1000 bales of twine, or a load of 25 tons. The railroads originally promised to make the run by August 26, but took such pains with the train that the time was thus much shortened.

This unusual and costly method of freight shipment was taken to relieve the twine famine now existing in western Canada, and will enable the company's agents there to fill dealers' orders for Plymouth twine in season for the farmers to use the product on getting in the last of their wheat. Crops in both Canada and the United States have this summer so far exceeded expectations that the demand for twine has risen in the last few weeks by leaps and bounds, and manufacturers have had hard work to deliver twine to the wheat raising sections fast enough. Under the ordinary method of handling freight shipments twine dispatched from North Plymouth later than Wednesday of last week would arrive in Winnipeg too late to be of any use to the farmer.

While the Plymouth Cordage Company often makes larger regular shipments of twine in a single day, this is probably the largest shipment of binder twine in history to go over such a long route without change in its make-up and on such fast schedule. The twine it contains is largely the 550 ft. to the pound variety, with some 600 and 500 ft. It is sufficient to bind over a quarter of a million acres of wheat.

As expected, there was a further decrease in the number of idle-freight cars in the two weeks ending August 15. The American Railway Association's bulletin shows a net surplus on August 15 of 43,901, a decrease of 12,609 in the fortnight. On August 16, 1911, the net surplus of idle cars was 104,170; one year previous it was 78,760.



The New 24-In. Invincible High Power Shaping Machine with 10-Hp. Reliance Adjustable-Speed Electric Motor Drive, Automatic Starter and Dynamic Brake Control Built by Gould & Eberhardt, Newark, N. J.

## High Duty Tool Room Lathe

### A Recent Addition to the American Line Characterized by a Number of Special Features

For handling all classes of tool room work the American Tool Works Company, Cincinnati, Ohio, has brought out four sizes of high duty tool room lathes. The general

shaft revolves constantly in one direction until the direction of rotation of the spindle is reversed and the driving shaft ceases to reciprocate the tool slide. This feature, it is pointed out, is valuable, since the tool slide will remain stationary when the direction of the carriage travel is reversed while the half nuts are engaged. This same feature also enables the tool to be withdrawn from the work and run back for a new cut as is the practice in tap and hob making without any waste motion of the parts, and also it is emphasized with absolute safety to the cams. This advantage is secured by the employment of a clutch connection between the cam and the driver which is operated in one direction only. Thus when the cam is set for operating in one direction the reversal of the driving shaft will cause the clutch, which is held in engagement by a spring, to be withdrawn from the cam with the result that no motion will be imparted to the tool slide.

In addition to the change gears, three cams of one, two and four rises respectively are provided to give the entire range shown on the index plates. These cams are readily interchangeable and are carried on a cam shaft which is located directly in front of the tool slide. A feature of this arrangement is that the number of reliefs most commonly used are obtained by making the slightest changes. Another valuable feature of the attachment is that the tool slide can be operated at every 30 deg., thus providing 12 operating positions within a circle. This makes possible the relieving of side cutters, end mills and other pieces which it is pointed out could heretofore only be done by hand. For varying the degree of relief on either external or internal work, a thumb screw at the front of the tool slide is provided, the depth of relief being indicated by a graduated scale. This attachment can be operated and applied independently of the taper attachment, and as far as the relieving attachment itself is concerned, a taper attachment is not required except when taper work is to be handled.

The taper attachment, like the relieving attachment, is also very simple both in design and operation. In constructing this attachment all parts have been made sufficiently heavy to avoid spring and inconvenience, and in addition numerous sliding joints have been avoided. This attachment is bolted to and travels with the carriage and can be instantly thrown into operation at any point along the lathe bed by simply tightening a single binder nut of the clamping dog and can be disengaged as easily. When attached for taper work the sliding shoe is directly connected with the bottom slide of the tool rest by a heavy

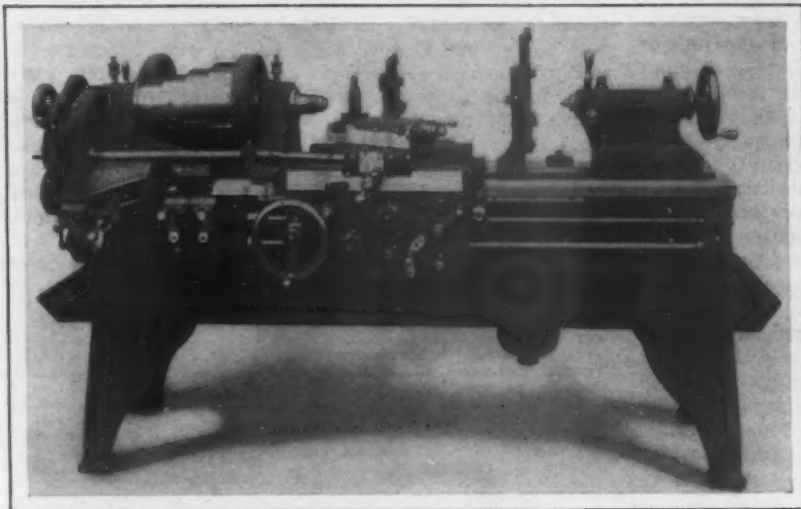


Fig. 1—The New High Duty Tool Room Lathe Built by the American Tool Works Company, Cincinnati, Ohio

design of this new tool is the same as the company's regular lathes which were illustrated in *The Iron Age*, March 2 and June 1, 1911. The construction of these lathes includes the patented drop V bed, the double plate apron, the quick change mechanism affording 48 thread and feed changes, the phosphor bronze bearings, etc., which are found in its forerunner, and in addition there are a pan for retaining the lubricant which must be used when working on hard steel as well as the various attachments needed to handle all classes of tool room work. As it is not always necessary for a tool room lathe to have the taper, draw-in and relieving attachments, the builder is prepared to furnish any one of them separately. A view of the new tool is given in Fig. 1, while the lathe arranged to give end and internal relief is illustrated in Figs. 2 and 3 respectively.

As the standard features of the construction of this tool are so well known no mention will be made of them in this description, special stress being laid rather upon the various attachments which can be furnished. The function of the relieving attachment is to relieve or back off the flutes of rotary cutters, end and hollow mills, dies, etc. The universal relieving attachment supplied with this lathe has been designed along original lines which it is emphasized renders the attachment completely universal in its operation, and it is claimed that end and internal relieving can be performed just as easily as that of the straight type. In addition to doing away with the limitations claimed to have been formerly imposed upon attachments of this character, the new design has eliminated numerous shafts, miter gears, racks, etc., and as a result is simple and efficient in design. One of the important features of the new attachment is that it can be used with any type of the builder's high duty lathe and can be as easily applied to and operated in connection with a geared head or motor-driven lathe as it can with a cone pulley head lathe.

The change gear mechanism is supported by a bracket located at the front of the headstock on top of the quick change gear box. A small quadrant carries the change gears and is used to disengage the drive when the attachment is not in use. The power for driving is taken from a spur gear located on the end of the spindle and is transmitted through a change gear mechanism to the driving shaft, which extends through the supporting bracket on the quick change gear box and is journaled at the other end in a bracket fastened to the left end of the carriage. Universal joints between this bracket and the tool rest permit cross movement of the tool slide. The driving

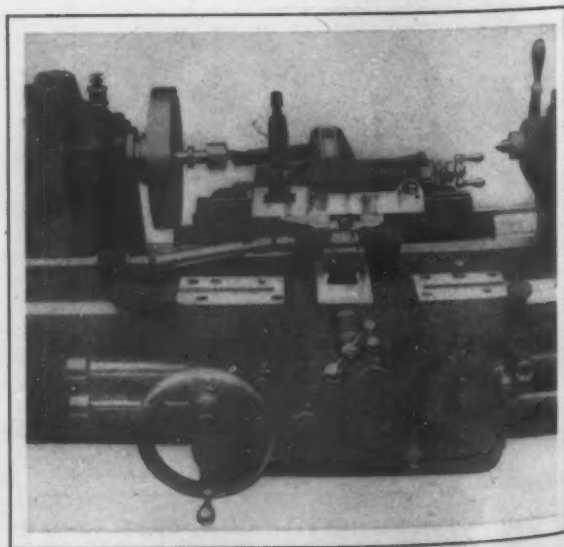


Fig. 2—The Lathe Arranged to Give End Relief



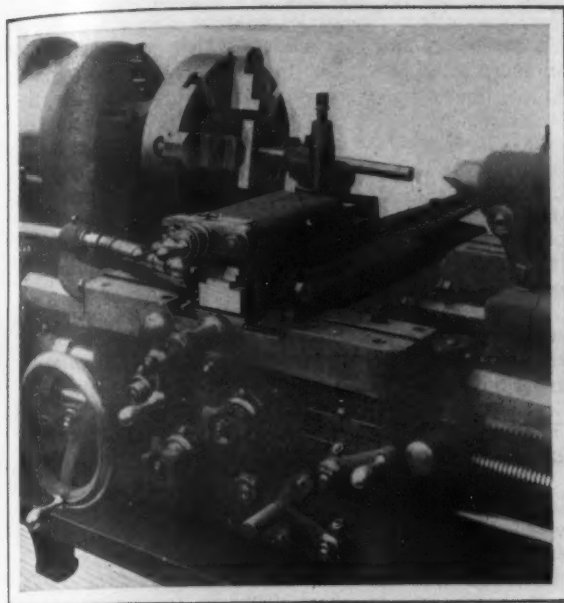


Fig. 3—Securing Internal Relief

cast-iron yoke, an arrangement which makes the operation instantaneous and also does away with all lost motion. The nut for engaging this shoe is arranged to slide in a slot in the yoke connected with the tool rest and is attached to or released from the yoke as the case may be by tightening or loosening a single screw. The cross feed nut is always connected with the tool rest, and thus, it is pointed out, it cannot fall to one side or out of position. For quickly setting to any desired taper within the range of the attachment accurate graduations are provided and in addition there is also a convenient hand screw with a graduated collar for use when very accurate settings are required. If the taper attachment is ordered before the tool leaves the builder's works, all work necessary for its application is finished so that the lathe and attachment reaches the customer ready for use without any further work on his part. If the attachment is ordered after the lathe has been purchased it can be readily applied by the user, as all the carriages are drilled to jigs and are tapped ready to receive a taper attachment with a small amount of fitting.

The other attachment furnished with the lathe is the draw-in one. This consists of a long hollow steel bar, a hardened and ground taper bushing and as many collets as are necessary to hold the different diameters of work. The hollow bar extends through the spindle and has a wooden handwheel at one end, while the other is internally threaded. The hardened and ground bushing fits into the spindles and the collets are placed therein, the threaded end extending through and being engaged by a thread, chased on the inside of the bar. The stock which is to be turned is passed through the bar from the head end of the lathe and is gripped in the collets or chucks, the engagement or disengagement of the work by the collets being controlled by turning the handwheel in one direction or the other.

These lathes are built in four sizes ranging from 14 to 20 in. in swing. The equipment includes a sheet-iron oil pan to catch the waste lubricant and thus prevent it from running on the floor and being wasted, a standard compound rest for general turning purposes and a special relieving rest, the change from one to the other being made very easily as both are interchangeable. With the 14 and 16-in. sizes, collets can be furnished for holding stock from a very small fraction of an inch up to  $\frac{3}{4}$  in. in diameter and up to 1 in. in diameter on the 18 and 20-in. tools.

The Tariff Board ceased its existence with the approval by President Taft of the conference report on the sundry civil bill. This bill makes no appropriation for the continuance of the Tariff Board, and the President was obliged to yield in his objection to the form in which the bill was reported by the conference committee of the Senate and House of Representatives.

### Checking the Mailing List

The printed matter sent out nowadays by manufacturers in all lines is so attractively prepared that its cost is a not inconsiderable item. Anything that can be done to check, if not entirely prevent, a waste of catalogues is therefore highly desirable. Probably the hardest problem encountered in the distribution of literature of this character is the making certain that the printed matter reaches the parties for whom it is intended and that no unnecessary copies are being sent out. In connection with its new catalogue, the Newton Machine Tool Works, Inc., Twenty-fourth and Vine streets, Philadelphia, Pa., has adopted a practice which might profitably be followed by other manufacturers. In each copy of the new catalogue a post card is inclosed. The face of the card contains the address of the company, together with a brief statement to the effect that if the person receiving the catalogue would give the information requested on the back of the card and thus enable the company to keep its mailing list revised, it would be very much appreciated. The back of the card, which is reproduced herewith, has spaces to indicate how many copies are being received, how many are really needed, where additional copies might be utilized and what changes of address should be made to

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keep the mailing list correct. For all ordinary purposes this information can be easily supplied by merely making check marks in the proper spaces.

### An Australian Iron and Steel Project

Announcement is made that the Broken Hill Proprietary Company, Ltd., which has for a long time been a very prominent copper and spelter producer in Australia, has bought 200 acres of land near Newcastle, New South Wales, with the intention of erecting large iron and steel works. Up to the present time the Lithgow Iron Works, New South Wales, has been the only manufacturer of pig iron and steel, but its production has been limited, probably due to insufficient financial resources. The entrance into the steel trade of the Broken Hill Company is therefore likely to mark a new era in Australia, as this company is possessed of ample means for carrying out any undertaking that may be decided upon. The statement is made that the times are propitious for the manufacture of iron and steel in Australia, as great development in railroads is contemplated. Besides the railroad requirements, a great deal of iron and steel is used for mining and agricultural purposes. A large deposit of 60 per cent. ore at Iron Knob, South Australia, is owned by the Broken Hill Company. Up to June 30, 1914, there is a bonus of \$2.88 per ton payable on all iron produced from Australian ores, which probably will be extended.

The Columbia Steel Company expects to have the new two-ton side-blown converter at its Pittsburgh, California, plant ready for operation in the latter part of September.

The Iroquois Iron Company, Chicago, has had its new furnace C at South Chicago in operation this month. It was blown in July 30.

## Combination Planing Machine

### Details of a Recently Completed Ryerson Product for Handling Gas Engine Bases

Joseph T. Ryerson & Son, Chicago, Ill., have recently completed a combined double housing and open side planing machine for the Gas Traction Company, Minneapolis, Minn., which is now associated with the Emerson-Brentingham interests. The machine was especially designed for planing the engine base castings used by that company in the manufacture of its tractor engines, and inasmuch as they required planing on the bottom and on both angular sides as well as on the ends the problem of handling was one that required serious consideration. The base castings were over 6 ft. long and any standard planer to handle the machining of the ends would of necessity have to be wide enough to permit the castings to pass between the housings, or in other words, the minimum size of tool that could be used would be a 72-in. machine. The planing of the angular sides of the base castings which were less than 3 ft. in width at the top also offered serious objections to the use of a 72-in. planing machine on account of the distance to which the side heads would have to be extended to handle this work regardless of the further difficulty encountered in planing this angle at a high speed under heavy cuts. The machine, which was designed by C. C. McConville, general superintendent of the Gas Traction Company, assisted by the engineering department of the Rockford Machine Tool Company, and Joseph T. Ryerson & Son, is a 36 x 36 in. x 16 ft. table machine with two heads on the cross rail and two side heads and an auxiliary housing carrying a single head and located approximately 4 ft. in front of the main housing. A view of this machine operating on one of these castings is given in Fig. 1, while Fig. 2 is an end view of the machine showing the arrangement of the various heads.

As will be noticed from Fig. 2, the cross rail of the planer is so extended that when operating with one head the other can be run out on the extension so that the operating head can be given a travel equal to the full width of the table. The side heads are arranged with power feed in all directions, thus permitting the planing of the angular sides of the base castings without the necessity of using taper attachments or special tools. In operation the engine's bases are first planed on the bottom, two being operated upon simultaneously. The castings are next mounted singly on a fixture which is pivoted in the center and accurately located in the different positions by a heavy stop pin. This fixture with the engine base mounted upon it is first located parallel with the machine

table and the top and the two angular sides are planed simultaneously. The angles and the sides are planed with clapper boxes and tool holders which are attached to the standard side heads. The brackets are clamped to the face of the housing and provide a rigid support to the clapper boxes directly back of the cutting tools. When this operation is completed the fixture carrying the castings is turned on its pivot to a right angle position and the end of the base is then finished with the head mounted on the auxiliary housing. This housing is located sufficiently far back to permit the casting to clear it without changing its position on the fixture. During the last operation the machine is operated at a short stroke.

There are several features of interest about the construction of the machine. As will be noticed from Fig. 1, the bed is very deep and it is thoroughly braced by cross girders of box section and is substantially reinforced where the gearing and the uprights are mounted. The length is such that there is very little overhang of the table when planing at the full stroke.

The V's are scraped to a bearing throughout their entire length and have a series of automatic roller oiling devices which keep the tracks thoroughly lubricated. These rollers can be easily removed and the pockets cleaned out from time to time. The table is very thick and is reinforced with heavy ribs at short distances to prevent springing either when work is being clamped upon it or when working at the limit of its travel where the overhang is a maximum. The T slots, which extend the full length of the table, are very deep and planed from the solid. There are a number of holes drilled and reamed through the entire surface of the table, while extra holes are located at the ends of the bed and the center T slot extends across the pockets, thus permitting work to be planed from 8 in. to 1 ft. over the rated size of the machine. The V's extend the entire length of the table and are scraped to a bearing on the bed. One of the special features is the dirt-proof construction, which prevents the dirt and chips falling through the holes in the table and upon the ways, which would soon destroy the life and accuracy of the tool. This arrangement is secured by casting a ledge on each side of the table V's, which overlaps the bed, thus fully protecting the ways and the bearings.

Box or double brace type housings extending down the entire width of the bed, to which they are securely bolted, are used. They are pinned and tied together at the top by a heavy box shaped arch, an arrangement which, it is pointed out, insures absolute stiffness with the cross rail at its highest position. Special fixtures are used to line them up on the bed so that they are square with the bed and parallel with each other. The faces are scraped

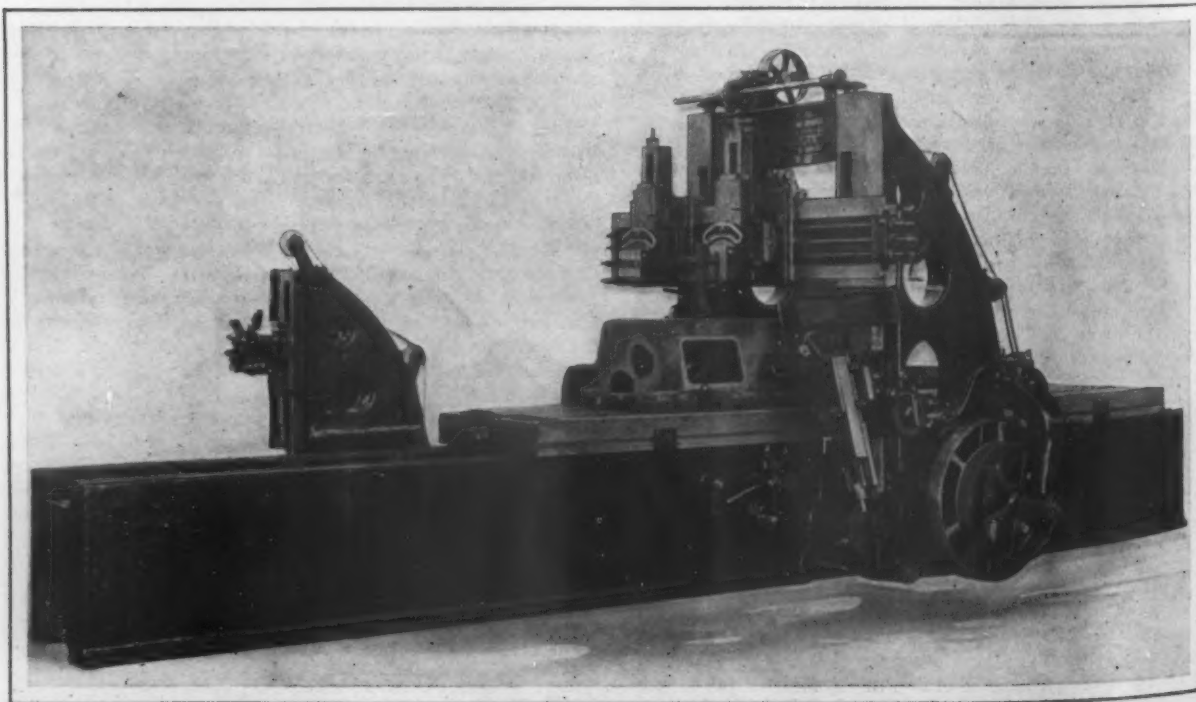


Fig. 1—The Combined Double Housing and Open Side Planing Machine for Handling Gas Engine Bases Built by Joseph T. Ryerson & Son, Chicago, Ill.



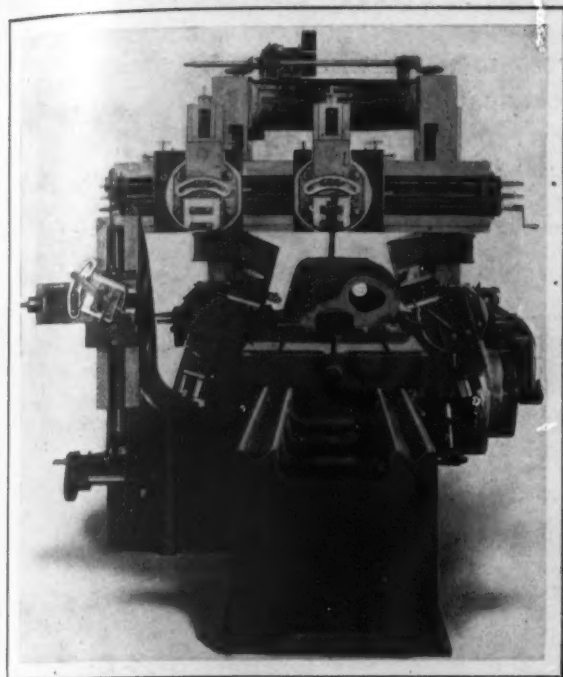


Fig. 2—An End View of the Machine Showing the Arrangement of the Various Heads

to standard surface plates and the housings are planed on the angle and scraped to a template to receive the side head. The cross rail is very deep and has an extra box section brace on the back to give additional stiffness. It is finished by scraping to standard surface plates and straight edges, and the back is also scraped to a bearing on the housing. The cross rail is also made of sufficient length to permit the right hand head to have full traverse across the machine. Each rail is bored in a special fixture which, it is pointed out, insures absolute parallelism between the feed screw and shaft and the bearings. The head is secured to the saddle by four bolts, and also has a scraped bearing. The down feed is exceptionally long and the saddle is graduated in degrees around the entire circle, thus permitting convenient adjustment to any angle to be made from either side of the machine. The side heads have vertical, horizontal and angular power feeds and can be run below the top of the table when not in use. Micrometer adjustment is furnished in all down feed screws so that accurate depths of cut can be rapidly and accurately obtained.

All the feed racks are accurately cut from bar steel and the pinions meshing with them operating the feeds are also of high-carbon steel. The friction used is of the combination releasing type, which can be operated at high speeds without heating. A hand nut and screw are used for regulating the amount of feed, which enables all the heads to be fed simultaneously when taking heavy cuts.

The driving shaft, which is of large diameter, is made of high-carbon steel. Special care is taken in the manufacturing of it and it is turned from a hammered bar, and after the keyseating and other operations are finished it is carefully ground to the exact size. The bearings consist of straight bushings which are bored and reamed slightly undersize and are ground on the outside until they have a press fit throughout their entire length in the holes that have been previously hand reamed in the bed to receive them. After being pressed into place, the bushings are hand reamed in turn, an arrangement which, it is emphasized, insures a smooth, round and perfectly aligned bearing. The shifting device is simple and is designed to transfer the belts quickly and noiselessly, thus reversing the machine without shock or jar. The belt arms are operated by a sliding cam, which keeps them in the proper position and moves one belt a little in advance of the other. The shifter levers are located on both sides of the machine, so that the operator can control the table motion without walking around the machine. These handles are placed so that they are within convenient reach of the operator, but are not in his way while standing close to the machine. Forward and backward stop dogs

fit in the T slots at the side of the table, and these are adjustable to come in contact with the builder's patent trip on the shifting mechanism, so that the bed can be adjusted to take any length stroke and will return automatically without any attention from the operator. The shifting mechanism is permanently locked by a safety locking device so that the table cannot start except at the will of the operator.

All the gearing used throughout the machine is accurately cut and aligned and has coarse pitch and a wide face. Heavy bearings of ample length are used to support the gear trains. The pinions are made of high-carbon open-hearth steel forgings, and the pulleys used are of aluminum. In addition to the system of lubricating the bed which has been previously mentioned, regular oil cups and holes are used, and all the shaft bearings have slots cut through them which are packed with wool felt oil retainers.

### The Foundry Exhibition at Buffalo

C. E. Hoyt, secretary of the Foundry & Machine Exhibition Company, has taken up headquarters at Buffalo and will be there in the next few weeks superintending the installation of the various exhibits for the foundrymen's convention in the week of September 23. He reports that the work of rebuilding the Broadway Exhibition Building is about completed. This is a new building, much better than has ever been used for the foundry exhibits. Thus far 90 exhibitors have taken space. This is six more than the total at Detroit, and more than were assured at Pittsburgh five weeks in advance of the opening day. There are still available 20 spaces, but it is expected that these will soon be taken. Special announcements have been sent to the members of the National Founders' Association, the National Metal Trades Association and other organizations, urging that they come and bring with them or send their superintendents and foremen.

### A Special Train from Chicago

Following its custom, the Chicago Foundrymen's Club, C. E. Hoyt, Armour Institute, secretary, has arranged for a special train to the annual foundrymen's conventions at Buffalo in the week of September 23. An invitation is extended to the foundrymen and their friends in the Chicago district and the Northwest to make the trip. The special train will leave Chicago on the Michigan Central Railroad, from the Central Station, Twelfth street and Park row, at 9 A. M., Sunday, September 22, and will arrive in Detroit at 3:30 P. M. From Detroit to Buffalo the trip will be by steamer of the Detroit & Cleveland Navigation Company, leaving Detroit at 5 P. M. Sunday and arriving in Buffalo Monday at 9 A. M. A sufficient number of staterooms have been reserved on the steamer from Detroit to Buffalo to take care of all who go on the special. The Chicago Association of Commerce is co-operating with the Chicago Foundrymen's Club in an effort to secure the 1913 convention of the American Foundrymen's Association and allied organizations for Chicago.

**Missouri Iron Ore Deposits.**—In *The Iron Age* of August 22, on page 408, an article was printed which referred to a report on the iron ores of Missouri. The article gave credit to State Geologist H. A. Buehler for the report mentioned. This was incorrect, as the report was made by G. W. Crane, and it was transmitted to the Board of Managers of the Bureau of Geology and Mines of Missouri by the State Geologist. Mr. Crane was assisted by V. H. Hughes and J. W. Bodman. The report makes a volume of 434 pages and has numerous illustrations and maps.

The establishment of a by-product coke plant by the Laclede Gas Company, St. Louis, is under consideration with a view to the production of a metallurgical coke from southern Illinois coal, the utilization of the gas in the city supply and the saving of the various by-products. There is also allied with this plan the possible construction of a new blast furnace or the utilization of an old one in St. Louis for the handling of Missouri ores. No definite details of the two projects have as yet been determined upon, the matters being in the preliminary stages only.

Mechanical and Civil Engineers,  
PITTSBURGH, PA.

# Blast Furnace Gas Engine Plant of 60,000 hp.

Equipment of the Power Development of the Gewerkschaft Deutscher Kaiser—Electrical Generating Units and Blast Furnace and Converter Blowing Engines

BY C. A. TUPPER, MILWAUKEE

The largest gas engine-driven power plant in Europe, and the one which impressed the writer the most favorably of any visited, is that of the Gewerkschaft Deutscher

mission over an independent electric system serving the communities and industries of an extensive district.

The power house has a length of 459 ft. and a width



Fig. 1—Interior of the 60,000 HP. Electric Station at Bruckhausen, Germany, Utilizing Blast Furnace Gas

Kaiser at Bruckhausen, on the Rhine, in Germany, which has a present capacity of 60,000 hp. It supplies current for operating coal mines, coke ovens and a by-products plant, blast furnaces, open-hearth, converter and electric steel plants, roughing and finishing mills and fabricating plants, foundries, machine shops, etc., and also for trans-

approximating 252 ft., being divided longitudinally into three parts, viz.: electric plant, 110 ft., blowing engine house, 116 ft., and a central bay, open at the bottom along each of the two 459 ft. sides, which contains auxiliary machinery, offices and various conveniences. This takes up the remaining 26 ft. of width. The power house building

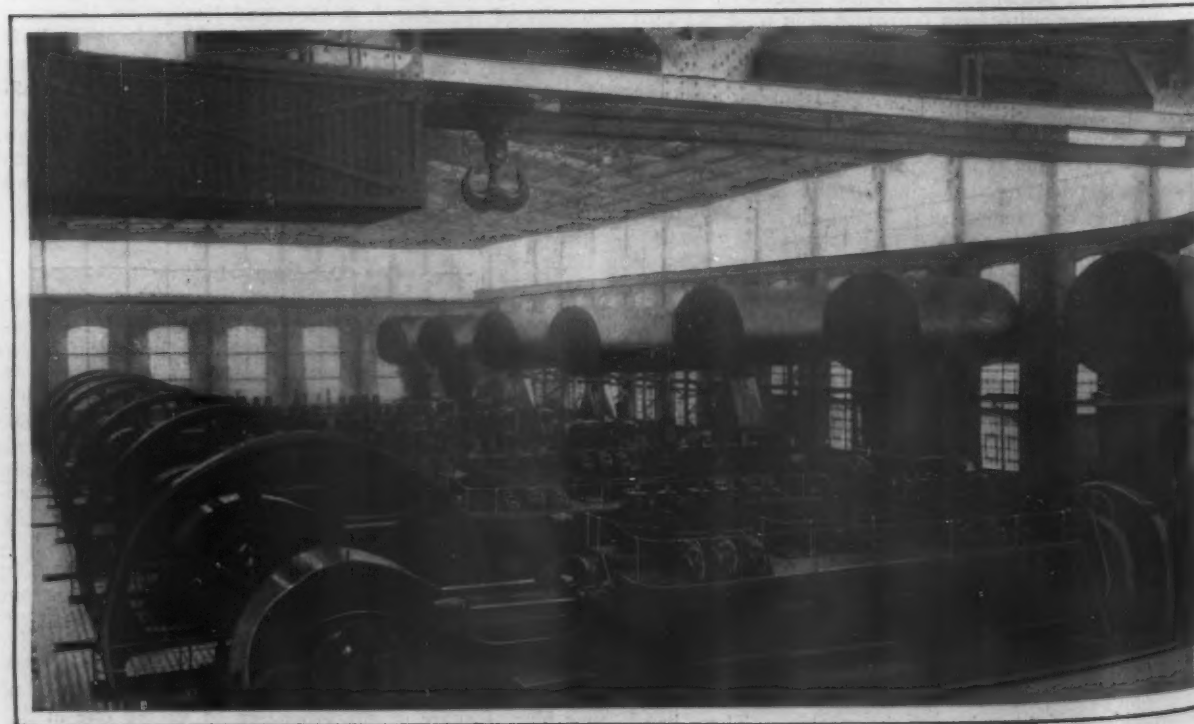


Fig. 2—View of Gas-Driven Blowing Engines, Bruckhausen, Germany



is of steel frame construction, with the roof and the sides very largely composed of glass, which affords excellent natural lighting throughout. At night the plant is illuminated by arc lamps and pillar clusters of incandescent lights. The floor is of tile, covered in the main passages and aisles with rubber matting.

The electric plant, from an interior view of which Fig. 1 has been taken, contains 12 units. All of the engines are four-cycle double-acting machines, 9 tandem and 3 twin-tandem, built by the Maschinenfabrik Thyssen & Co., Mülheim-Ruhr, Germany. Of the first named, four have cylinders 43.3 in. in diameter, by 51.3 in. stroke, and to each engine a 1450 kw. generator is direct connected; five have cylinders 48 in. in diameter by 55 in. stroke, and drive 2000 kw. generators direct coupled, and the three largest have 51 in. cylinders by 59 in. stroke. To each of these a 4500 kw. generator is direct connected.

All of the gas used in the engines is that generated by the blast furnaces, from the tops of which it is taken in the usual manner. After passing through 22 ft. dry dust catchers, the gas is collected in two gas mains, 8 ft. 6 in. in diameter, with a third held in reserve, which discharge to the 13 ft. header of the cleaning plant proper. Here the first receptacles are three dry dust catchers, 19 ft. 8 in. in diameter by 25 ft. high, elevated sufficiently above the yard level to enable the accumulated dust to be dumped into dustproof inclosed railroad cars of a special design, in which the dust is transported to a briquetting plant.

tors and thence into the final collecting main, which is connected to a gas holder 60 ft. in diameter and of about 175,000 cu. ft. capacity. Another branch of 5 ft. diameter by-passes the gas holder, giving direct connection to the power plant when the holder is not in service.

The raw gas contains, on an average, 3.5 grains of dust per cubic foot. It leaves the Zschocke scrubbers with a content of about 0.50 grain per cubic foot, which drops to about 0.11 grain per cubic foot after the preliminary Schiele cleaning fans. In the secondary cleaning plant the amount of the dust is reduced to about 0.013 grain per cubic foot, the gas arriving at the engines with a content of about 0.011 grain per cubic foot (about 0.025 grams per cubic meter). The dust determinator is of the Stroehlein cotton-method type.

The temperature of the gas entering the cleaning plant (carried in unlined pipes across the ore yard for about 1200 ft.) is 194 to 212 deg. F. This temperature is reduced to about 79 deg. F. behind the Zschocke washers and is about 70.5 deg. after the Schiele fans. The temperature of the water supply is 79 deg. and the waste leaves the washers at 104 deg. The quantity of water consumed for cleaning is 30 gal. per 1000 cu. ft. for the preliminary processes, in which quantity the Zschocke scrubbers share with 23 and the Zschocke fans with 7 gal. The quantity of water used in the secondary plant, having the Schiele fans, is 12 gal. per 1000 cu. ft., so that a total of about 42 gal. per cu. ft. is required.

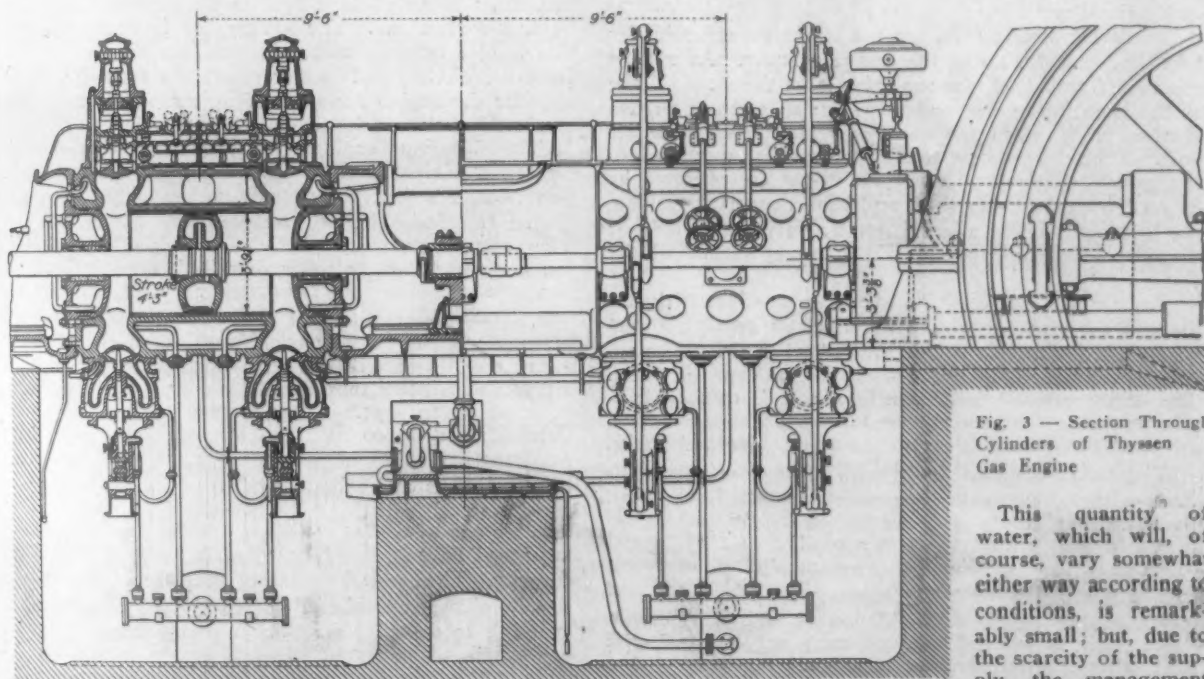


Fig. 3 — Section Through Cylinders of Thyssen Gas Engine

This quantity of water, which will, of course, vary somewhat either way according to conditions, is remarkably small; but, due to the scarcity of the supply, the management has adopted every possible

means of conserving it. All of the waste water from the gas cleaning plant is carefully collected and carried in launders to two settling tanks for purification. One of these, which has nine compartments with a total area of 80,000 sq. ft., takes the water from the wet scrubbers only, while the waste from the preliminary and secondary fans is purified in the smaller tank of four compartments and 27,000 sq. ft. area. The waste water passes through the compartments of the tanks in series and thence flows to a reservoir to be pumped over a cooling tower 150x45 ft. in area, with natural draft. For this purpose there are three centrifugal pumps, and the cooled water is raised by another set to the top of a distributing tower. The residue from the cleaning tanks is removed by means of grab buckets operated from gantry cranes and conveyed to the coal mines on the property for use in backfilling.

The gas enters the power plant through a ring main 6 ft. 6 in. in diameter, from which feeder pipes of 20 in. diameter branch off to the engines. This piping is laid underneath the floor and is readily accessible. The combustion air for the engine cylinders is taken in through ducts which are integral with the concrete foundations and terminate on the outside in pockets protected by wire gauze. The piping for the cooling water, compressed air

Each dust catcher can be shut off by means of a valve of the water sealed, mushroom type, and is connected to two wet scrubbers arranged in series. The six wet scrubbers are arranged in rows of three, those of each row operating in parallel while the two rows work in series. These scrubbers, the towers of which are 24 ft. in diameter by 32 ft. high, are of the Zschocke type designed and built by the Zschocke Werke, Kaiserslautern, Germany.

After leaving the scrubbers the dry cleaned gas is collected in one large main of 13 ft. diameter, which distributes it to six hydraulic fans of the Schiele type. The branch pipes to each fan are 4 ft. 3 in. in diameter. The outlet pipes discharge the clean gas into water separators and thence into another collecting main 12 ft. 6 in. in diameter, whence it returns to the blast furnace stoves in two 8 ft. pipes, which form a complete loop around the furnace plant. Water sealed mushroom valves, conveniently arranged, permit the shutting off of any section of this ring main for cleaning purposes.

From this collecting main the gas available for the power plant is drawn off in a 6 ft. 6 in. pipe and carried to the secondary cleaning plant. The latter consists of five Schiele fans discharging the fine gas into water separa-

used in starting, etc., is laid similarly to that for gas. All of the conduits and the pipes, which are painted different colors to indicate their purpose, have been arranged on the loop system, to enable the engines to be supplied from either direction, and any unit may be cut off from the mains common to all without interrupting the service of the others.

Immediately adjacent to each engine there is a gas receiver, with supply pipes leading to each cylinder. The gas supply reaches the engine from the receiver through the left hand pipe in Fig. 4, and a handhole is provided in the port leading to the gas valves, through which any deposit can be removed as required. The gas supply to each end of each cylinder can be independently adjusted by means of the hand wheels shown on the side of the right hand cylinder in Fig. 3, which actuates a link motion for opening or closing the valves shown immediately above the cylinder in Fig. 4.

The air supply pipe is the larger pipe at the left in Fig. 4, and a valve is provided by means of which the proportion of air drawn in can be regulated by hand. Having these two adjustments, the engine can be run on gas of any quality suitable for power purposes, since, by varying the relative degrees of opening and closing of these valves on the air and gas supplies, the proportion of air to gas can be varied through as wide a range as needed. Closer regulation, to meet all operating conditions, is obtained through the additional throttle valves shown above the left hand cylinder in Fig. 3, which are under the direct control of the governor.

Particular attention is directed to the arrangement for admitting gas and air to the engine cylinder. As will be observed from Fig. 3, the gas valve is on the same spindle as the main inlet valve, and there is also a sleeve on this spindle which, when the valve is seated, covers the air port. Thus the opening to air is always proportional to the opening for gas. These inlet valves are operated by an eccentric on the side shaft and have a constant opening, the governing being effected not by varying the lift or duration of opening of this valve but by means of the throttle valves.

The exhaust valves, it will be seen, are located below the cylinder and are wholly contained in separately cast boxes, which can be readily removed when the valves require examination or any work is to be done on them. The engine exhaust, as shown in Fig. 4, is through suitable piping to concrete muffler tunnels on either side of the plant, connected to the atmosphere through steel stacks.

The jacket is cast integral with the cylinder, but it is fitted with a renewable liner which takes all the wear. Both cylinder heads and pistons are water cooled, as shown in Fig. 3, and the water cooling of the exhaust valves and their casings has been amply provided for. The cooling water enters at about 72 to 78 deg. F. and leaves at 104 to 108 deg. F., flowing into a reservoir. From this it is pumped to a cooling tower equipped with fans, where the temperature is reduced to about 75 deg. Approximately 12 gal. of water, on the average, is needed per brake horse-power hour.

For the cylinders there is forced lubrication, oil being pumped in through a pipe piercing the water jacket, extending diagonally to the top of the cylinder in Fig. 4. As the engines are four-cycle machines, the side shaft has to be geared down. This is effected by spiral gearing located between the flywheel and one of the main bearings, and the gearing runs in an oil bath, being fully inclosed. The crank shaft has three bearings, that on the right hand having a spherical seat. The brasses are lined with white metal, and the lubrication here is also forced. There is no central oil supply, but each engine has been provided with its own system throughout. As the oil is used it flows to a tank in the basement under each engine and is pumped back through a strainer. This keeps it clean enough so that filtering has to be done only once in two or three months.

The two cylinders in tandem are connected at the top by steel stays supplementing the tie piece. Similar stays lead from the first cylinder to the top of the main bearings, and this tends to relieve the engine frame from the bending strains which were so frequent a source of trouble in earlier days. The two piston rods are connected by a cross head and the tailrod at the rear is suitably guided. Hence the pistons and the rods float in the cylin-

ders, and their weight is taken off the glands. The gland packings are metallic.

The generators direct coupled to the gas engines are alternating current machines of the usual revolving field type, supplying three-phase, 50-cycle current at a terminal pressure of 5000 volts. Each is built with a heavy fly-wheel rotor, except for the three first installed, which have separate flywheels. The earlier machines were from the Siemens-Schuckert Werke, while the latest have been constructed by the Allgemeine Elektrizitäts Gesellschaft, Berlin. When the production is greater than the local needs the excess current can be turned into the great independent system of the Rheinische-Westphalische Elektrizitäts Werke, which has a network of transmission lines connecting districts in a great part of the coal, iron and steel producing section of north Germany. The sale of current for this purpose is a good source of income for the Gewerkschaft Deutscher Kaiser, although its own consumption has averaged of late about 70 per cent. of the maximum capacity of the plant.

From the electric plant the visitor to the power-house passes into the longitudinal central compartment, or bay, 26 ft. wide, which has its main floor depressed below the level of the generator and blower rooms. On this are installed the pumps, air compressors and tanks, exciter units, transformers, etc., as well as an oil filter plant; while on a floor above are offices, a dining-room, lockers, toilet-rooms, etc., and a storage battery installation for supplying the incandescent lights, thus preventing the station from being plunged into darkness should the main lighting system fail. The battery for ignition current is also located here. Leading down to the floor of the bay from the electric and blower plants are stairways placed opposite the engine units, affording means of quick communication between the several departments.

The blowing engine plant of the Gewerkschaft Deutscher Kaiser extends the full length of the 489-ft. power-house and occupies 116 ft. of the width, being separated from the electric plant only by the central bay. The arrangement of this is, in general, similar to that of the generator room, already described, the layout of the gas, combustion-air and starting-air piping, cooling system, lubrication, etc., being the same. There are seven blowing engines for supplying blast furnaces, one being always held in reserve. Four of these units have gas cylinders and blowing tubs 43.3 in. and 100.8 in. in diameter, respectively, with 51.2-in. stroke, and are capable of delivering about 40,000 cu. ft. of free air per minute at the maximum rated speed of 90 r.p.m.; while three units have cylinders and tubs 48 and 114.3 in. in diameter by 55.1-in. stroke, with a displacement of 56,000 cu. ft. of free air per minute at the same speed. The usual working speed limit is, however, 80 r.p.m., with corresponding capacity. The normal operating pressure of the units is 10.3 lb. above atmosphere; but each is so designed as to enable it to deliver air at higher pressures up to 14.7 lb. or beyond, with corresponding reduction in volume. All were built by the Maschinenfabrik Thyssen & Co..

Each of the furnace blowers discharges into an air dome, manufactured by the engine builders, which is 40 ft. long and 10 ft. in diameter, made of 56-in. steel with welded seams. This effectually prevents any leakage of air or oil and serves as a pressure equalizer, eliminating vibrations in the cold blast piping and elsewhere. The blast pipe leading to each of the six furnaces is 4 ft. in diameter, with accordion expansion joints, and the system is arranged so that any engine may supply the blast for any furnace. In practice two engines are usually blowing one furnace.

There is also in the blower department two Thyssen twin-tandem blowers for converter service, which have cylinders and tubs 48 in. and 74.8 in. in diameter by 55.1-in. stroke. Each also operates at 90 r.p.m. and has a maximum capacity of about 56,000 cu. ft. at 36 lb. pressure and can also blow to 44 lb. These blowing engines are stated to be the largest of the type thus far built. The second unit had not been erected when the writer was in Bruckhausen, but the first had given entire satisfaction. Particularly remarked upon by the engineer in charge were the accessibility of all parts and the ease of regulation, all of which is effected from one position. The machines have no governors, but each is operated from the stand between the cylinders, where the main gas throttle valve, the hand wheels for mixing adjustment and ignition



timing, as well as the hydraulic unloading levers, are conveniently located, so that one man can handle the engine.

During so-called blowing up periods of the converters a valve in the blast main is open, while another valve in a branch pipe to the atmosphere is closed. During the blowing down periods the engine continues at full speed and the air is blown into the atmosphere by reversing the hydraulic valves. It is, of course, peculiar to the operation of converters that greater demands must be made upon the quick regulation of the air pressure and volumetric delivery of a blower for this service than upon one discharging to blast furnaces. When the first of the two machines just described was under consideration it was argued that steam-driven blowers would be more reliable, or that, if gas-driven blowers were chosen, the two-cycle engine would be better adapted to the service

open upon the plant area; a large coke and by-products plant; six blast furnaces recently remodeled, with inclined electric skips hoists, bell tops, etc.; a nine-furnace Siemens-Martin open-hearth steel plant; a basis Thomas converter plant of 5 to 16-ton units; new electric refining furnaces; two blooming mills, seven finishing mills, etc., as well as allied fabricating, founding and machine plants under the control of the owners, viz.: the Thyssen interests, which, next to the Krupps, are the largest of the German metal industries.

The Maschinenfabrik Thyssen & Co., one of these interests, has gone extensively into the manufacture of large gas engines and claims to have built more of these than any other European concern, or a total of upward of 400,000 hp., including the blowing engines mentioned above and 180,000 hp. in electric units, all since 1906.

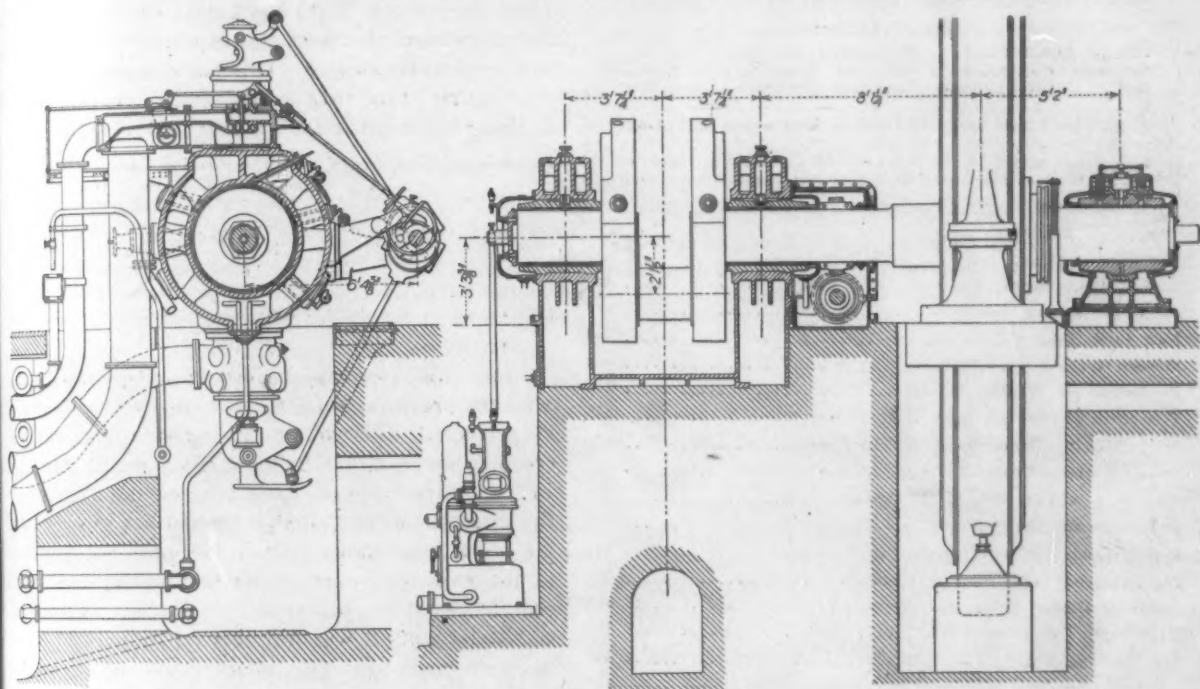


Fig. 4—Cross Sections Through the Thyssen Gas Engine

than the four-cycle, particularly at low speeds. It has proved, however, that the four-cycle machines installed at Bruckhausen, as well as similar converter blowing engines from the Maschinenfabrik Thyssen & Co., have fulfilled all of the demands made upon them. In addition to the unloading device at the blower end, by means of which the air volume from full load to no load can be instantly varied, with speed constant, the valve gear of the engine is so designed that the speed can be varied at will within wide limits. How closely this latter regulation works is demonstrated by the fact that the machine operates with absolute reliability at speeds as low as 20 r.p.m., while the maximum speed, 90 r.p.m., can be attained within 20 seconds.

Greater demands cannot be placed upon even a first-class steam blowing engine, and it is self-evident that these characteristics have put the four-cycle gas blowing engine in a position to compete successfully also with steam turbine driven or motor driven turbo blowers or two-cycle gas blowers. According to figures given to the writer by the Maschinenfabrik Thyssen & Co. some time ago, they have already built over 200,000 hp. in machines of this type. They also make a point of the fact that, in addition to equal service reliability, the four-cycle gas blowing engines have about three-fold the efficiency of steam-driven blowers and lead the two-cycle gas blowing engines in mechanical and thermal efficiency together by 8 to 15 per cent. There is also the further benefit, in comparison with steam turbine-driven blowers that a condensing system with high vacuum is essential to the successful operation of a turbine plant, and this requires a large quantity of cold water, or about eight times as much for a gas engine of the same capacity, which in many places can only be obtained at high cost.

The works of the Gewerkschaft Deutscher Kaiser include extensive coal mines, some of the shafts of which

In the preparation of this article the writer is indebted for the description of the cleaning plant and considerable other data to H. J. Freyn, who made a much more thorough inspection of the Bruckhausen power system than the writer did, and whose work in connection with the largest gas engine installations in the United States is well known. It will also be worth while for any one having a practical interest in blast furnace gas power plants to compare the results described above with those given by Mr. Freyn in his paper read before the American Society of Mechanical Engineers on the plant at the South Chicago Works of the Illinois Steel Company. This was published in June, 1910.

The Electric Furnace Company, Alliance, Ohio, has closed contracts with a number of forging plants for electric furnace installations, some of which will be running shortly. The first contract came from J. H. Williams & Co., Brooklyn, N. Y.; the next from the McKinnon-Dash Company, St. Catharines, Ontario, Canada, and a third from the Canton Drop Forge Company, Canton, Ohio. The last named contract includes a low pressure turbine, taking its steam supply from steam hammers.

The rolling mill at South Portland, Maine, formerly operated by the Portland Iron & Steel Company, is now operated under lease by the Bancroft & Martin Rolling Mills Company, Seth L. Martin, president, and Joseph B. Bancroft, secretary and treasurer.

The National Copper Refining Company, Cleveland, Ohio, has been incorporated with a capital stock of \$250,000 by F. K. Rand, F. H. Rand, Julius Bloomberg, Eugene E. Wolf and Nathan Komito.

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1912 (based on first half) ..	2,856,862	4,628,000	5,856,000

\*Metric tons.

Since 1909 Germany has been leading Great Britain with the prospect that the excess this year will be fully 25 per cent. This country in the same time has been creeping up on Great Britain. So much has been said of the influences that have affected the alignment of the three countries that that ground has become familiar. The remarkable gain in Germany's export trade in the past ten years is the outstanding fact in the world's commerce in that period. It has been repeatedly emphasized, but it will still bear repetition, that science has been made to serve commerce and industry in Germany as in no other country. And the London Iron and Coal Trades Review, in driving home again upon the British steel trade the demands of the situation, says: "If we are to contend successfully against such a nation our best blood, our highest intelligence, the skilled aid of our official departments and every modern auxiliary must be energetically and persistently directed to the desired end." It also quotes with approval from the comment of Sir Robert Hadfield on his observation of the work of German government institutions, "where the toughest nuts of German industry are cracked," this interpretation of the German advance:

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Thus the first development to follow this important piece of legislation is adverse to American business interests. Apart from the business consideration is the feeling of disappointment among friends of American shipping interests that vessels which were intended to be somewhat comparable with the great ships owned by other countries are now not to be built. It is stated that each of these vessels was to have a displacement of about 38,000 tons. The Pacific Mail Steamship Company had planned to expend about \$22,000,000 in completely fitting them out. It now remains to be seen whether other American navigation interests or capitalists will find in the provision in the bill for the admission to American registry of foreign-built vessels a sufficient inducement to invest in such vessels for the purpose of sailing them under the flag of the United States. In his comments on the bill on Saturday, President Taft is reported to have said that this provision of the bill would not hurt American shipyards because they are not building vessels for the foreign trade but only for those engaged in coastwise traffic, and further, that the country might try for a time the experiment of admitting foreign-built vessels to American registry

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The following figures furnish a basis from which some idea can be obtained as to the tonnage of rails which have worn out in service and been replaced:

<i>United States Steel Rail Statistics to January 1, 1912.</i>	
Production .....	65,700,000 gross tons
Imports .....	1,600,000 gross tons
Total .....	67,300,000 gross tons
Exports .....	4,300,000 gross tons

Balance .....	63,000,000 gross tons
---------------	-----------------------

The total tonnage of steel rails in service at the beginning of this year in the United States was therefore 63,000,000 tons, minus what has been abandoned. At the beginning of 1912 there was approximately 357,000 miles of standard steam railroad track in existence, and approximately 43,000 miles of electric, cable, elevated and horse car track, a total for the United States of about 400,000 miles. To lay one mile of track in 100-pound rails requires 157.13 tons, making 62,852,000 tons for 400,000 miles, or almost precisely the tonnage which constitutes the entire supply furnished. There are two offsets: first, that the average section actually in service is less than 100-pound, and second, that there are 7000 or 8000 miles of track still laid in iron rails. On the other hand, a considerable tonnage of rails has been used for small industrial railroads. The only important consideration, then, is that the average section is less than 100-pound, and this deficiency practically balances the rails which have been taken up at various times. Estimates will differ as to the average section, but it probably lies between 75 and 85 pounds, which would make the total tonnage in track fall 10,000,000 to 15,000,000

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Total .....	67,300,000 gross tons
Exports .....	4,300,000 gross tons
Balance .....	63,000,000 gross tons

The total tonnage of steel rails in service at the beginning of this year in the United States was therefore 63,000,000 tons, minus what has been abandoned. At the beginning of 1912 there was approximately 357,000 miles of standard steam railroad track in existence, and approximately 43,000 miles of electric, cable, elevated and horse car track, a total for the United States of about 400,000 miles. To lay one mile of track in 100-pound rails requires 157.13 tons, making 62,852,000 tons for 400,000 miles, or almost precisely the tonnage which constitutes the entire supply furnished. There are two offsets: first, that the average section actually in service is less than 100-pound, and second, that there are 7000 or 8000 miles of track still laid in iron rails. On the other hand, a considerable tonnage of rails has been used for small industrial railroads. The only important consideration, then, is that the average section is less than 100-pound, and this deficiency practically balances the rails which have been taken up at various times. Estimates will differ as to the average section, but it probably lies between 75 and 85 pounds, which would make the total tonnage in track fall 10,000,000 to 15,000,000

tons below the quantity involved if the section were uniformly of 100 pounds. This represents approximately the tonnage of steel rails which have disappeared from service on the railroads of the United States since their use began almost half a century ago. The actual wear has thus been very small, but it is increasing rapidly from year to year as the traffic increases, irrespective of the number of miles of track in service. Statistics of freight ton-mileage have shown a doubling on an average once every 12 years, and this is a fairly trustworthy index to the increase in traffic as well as a suggestion as to the increasing rate at which rails are being worn out.

## Specifications for Concrete Bars

Those for Rerolled Steel Are New,  
While Those for Steel Rolled from  
Billets Are Made More Definite

In *The Iron Age* of August 22 were printed the revised specifications for structural and boiler steel recently adopted by the Association of American Steel Manufacturers. The association also recently ordered a letter ballot on a revision in the manufacturers' standard specifications for concrete reinforcement bars as well as on the adoption of specifications for concrete bars from old rails. The ballot resulted in the ratification of both. The only change in the specifications for concrete reinforcement bars from those adopted in 1910, and already published in these columns, is that in the first paragraph the reference to billets is made more definite. Paragraph 1 formerly read: "Steel may be made by either the open-hearth or Bessemer process. Bars shall be rolled from billets." The new paragraph reads: "Steel may be made by either the open-hearth or Bessemer process. Bars shall be rolled from standard new billets." There had been some confusion in connection with the old reading. The change made is in line with a similar one adopted this year by the American Society for Testing Materials. To distinguish between the two kinds of concrete bars the specifications in question now bear the title, "Standard Specifications for Concrete Reinforcement Bars Rolled from Billets." The last three words are added to the original title.

The specifications for rerolled steel concrete reinforcement bars are pioneer work on the part of the Association of American Steel Manufacturers. Their adoption will enable engineers to buy the reinforcement steel of their choice under specifications and will prevent the confusion previously existing. The new specifications will be found below.

### Standard Specifications for Rail Steel Concrete Reinforcement Bars

#### MANUFACTURE

1. All steel shall be rolled from standard section tee rails.

#### PHYSICAL PROPERTIES

2. The physical properties shall conform to the following limits:

Properties considered.	Rail steel grade.	
	Plain bars.	Deformed and hot-twisted bars.
Ultimate tensile strength, min. lb. per sq. in. ....	80,000	80,000
Yield point, min. lb. per sq. in. ....	50,000	50,000
Elongation, per cent. in 8", min. ....	1,200,000	1,000,000
	T. S.	T. S.
Cold bend without fracture:		
Bars under 3/4" in diam. or thickness....	180° d.=3t.	180° d.=4t.
Bars 3/4" in diam. or thickness and over..	90° d.=3t.	90° d.=4t.

#### YIELD POINT

3. For the purposes of these specifications, the yield point shall be determined by careful observation of the drop of the beam of the testing machine, or by other equally accurate method.

#### FORM OF SPECIMENS

4. (a) Tensile and bending test specimens may be cut from the bars as rolled, but tensile and bending test specimens of deformed bars may be planed or turned for a length of at least 9 inches if deemed necessary by the manufacturer in order to obtain uniform cross-section.

- (b) Tensile and bending test specimens of hot-twisted bars shall be cut from the bars after twisting, and shall be tested in full size without further treatment, unless otherwise specified.

#### NUMBER OF TESTS

5. A complete physical test shall be made, by an approved testing laboratory, of each size of bar to be applied by the manufacturer on the contract from each ten-ton lot or less. Should a test specimen develop flaws, or should the tensile test specimen break outside of the middle third of its gauged length, it may be discarded and another test specimen substituted therefor. In case a tensile specimen does not meet the specifications, an additional test may be made.

- (c) The bending test may be made by pressure or by light blows.

#### MODIFICATIONS IN ELONGATION FOR THIN AND THICK MATERIALS

6. For bars less than 7/16 in. and more than 3/4 in. nominal diameter or thickness, the following modifications shall be made in the requirements for elongation:

- (d) For each increase of 3/4 in. in diameter or thickness above 3/4 in., a deduction of 1 shall be made from the specified percentage of elongation.

- (e) For each decrease of 1/16 in. in diameter or thickness below 7/16 in., a deduction of 1 shall be made from the specified percentage of elongation.

#### NUMBER OF TWISTS

7. Hot-twisted bars of rail carbon steel shall be twisted with one complete twist in a length equal to not more than 12 times the thickness of the bar.

#### FINISH

8. Material must be free from injurious seams, flaws or cracks, and have a workmanlike finish.

#### VARIATION IN WEIGHT

9. Bars for reinforcement are subject to rejection if the actual weight of any lot varies more than 5 per cent. over or under the theoretical weight of that lot.

## The Griscom-Russell Company

The claim is made that the largest steam specialty manufacturing business in this country is the result of the formation of the Griscom-Russell Company, with a capital stock of \$2,000,000, by the consolidation of the Griscom-Spencer Company of New York and Jersey City and the Russell Engine Company, Massillon, Ohio. The general offices will be at 90 West street, New York City. C. A. Griscom, Jr., president of the Griscom-Spencer Company, becomes president of the new company. The Russell Engine Company interests will be represented by its former treasurer and general manager, Arvine Wales, first vice-president of the consolidation, while C. M. Russell, vice-president, joins the board of directors. The staffs of the two companies remain, but the selling and agency organizations will be increased.

The Jersey City plant of the first named company will gradually be moved to Massillon, where the engine works will be enlarged to meet the increased business, giving employment to several hundred men in addition to those now engaged in the manufacturing business of the Russell Engine Company. Temporary buildings will be put up, and as soon as the exact requirements have been determined a brick shop, 150 x 700 ft., will be erected. The growth of the Griscom-Spencer Company, formerly the James Reilly Repair & Supply Company, had necessitated larger quarters. Mr. Griscom, at a dinner given by Massillon and Canton business men welcoming his coming, said: "Moving our plant to Ohio was determined upon after two years of research ranging from New England to the Mississippi, ending in the conclusion that central Ohio afforded almost ideal manufacturing conditions."

The new company will manufacture a complete line of specialties, including Reilly multicoil feed water heater (closed type), Goubert multipass feed water heater, Goubert hot water generator, Goubert steam condenser, Massillon feed water heater (open type), Stratton steam separator, Bundy steam and oil separators, Thompson evaporative steam condenser, G-R water filters, G-R grease extractors, G-R coolers and heat extractors, G-R air conditioning devices and the Russell steam engines.

The Tyler Tube & Pipe Company, Washington, Pa. has sent out a card inviting inspection of its handsome office building just completed. The card further states that the company will take pleasure in showing its modern plant devoted to the making of high-grade boiler tubes.



# Connellsville Coke Prices for Thirteen Years

Having had numerous inquiries for a tabulation of average monthly prices of coke for a series of years, we present below tables showing prices of prompt shipment Connellsville furnace and foundry coke for 13 years, 1900 to 1912, averaged from weekly quotations in *The Iron Age*.

Average Prices of Prompt Connellsville Furnace Coke, per Net Ton at Oven													
	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January .....	\$3.37½	\$1.75	\$2.90	\$5.00	\$1.60	\$2.46	\$2.62½	\$3.53	\$1.92	\$1.59	\$2.55	\$1.40	\$1.82
February .....	3.00	1.75	2.50	5.00	1.52½	2.56	2.14	3.50	1.86	1.59	2.12½	1.45	1.78
March .....	3.55	1.90	2.87½	5.00	1.65	2.43	2.24	3.02	1.72½	1.60	2.00	1.55	2.12½
April .....	3.56	2.00	2.50	4.20	1.60	2.07½	2.45	2.72½	1.57	1.60	1.77½	1.59	2.39
May .....	3.00	2.00	2.50	3.50	1.50	1.87½	2.46	2.16	1.50	1.57½	1.66	1.50	2.28
June .....	2.75	1.87½	2.69	3.00	1.45	1.82	2.32½	1.89	1.55	1.52½	1.65	1.42	2.02
July .....	2.37½	1.75	3.00	2.50	1.45	1.81	2.51	2.40	1.57½	1.58	1.59	1.44	2.21
August .....	2.00	1.75	3.87½	2.25	1.45	1.80	2.76	2.62	1.50	1.66	1.57	1.46	....
September .....	2.00	1.75	5.00	2.20	1.45	2.10	2.85	2.82½	1.50	2.39	1.60	1.50	....
October .....	2.00	1.77	8.00	1.90	1.47½	2.61	2.84	2.85	1.53	2.76	1.59	1.50	....
November .....	2.00	1.95	6.00	1.75	2.04	2.95	3.13	2.41	1.72½	2.74	1.50	1.52	....
December .....	1.87½	2.14	6.00	1.62½	2.12½	2.79	3.52½	2.06	1.82	2.67	1.44	1.60	....

Average Prices of Prompt Connellsville Foundry Coke, per Net Ton at Oven													
	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January .....	\$3.50	\$2.25	\$3.17	\$6.50	\$2.18	\$2.38	\$3.42	\$4.25	\$2.45	\$2.00	\$2.90	\$1.90	\$1.97½
February .....	3.31	2.31	3.50	6.50	2.10	2.68	2.65	4.00	2.39	1.95	2.70	2.10	2.09
March .....	4.10	2.50	3.50	6.50	2.25	2.75	2.78	3.65	2.25	1.95	2.60	2.05	2.56
April .....	3.75	2.50	3.12½	5.50	2.15	2.70	2.95	3.11	2.22	1.86	2.45	2.00	2.69
May .....	3.15	2.50	3.15	4.50	2.00	2.55	2.81	3.00	2.03	1.85	2.20	1.81	2.58
June .....	3.06	2.37½	2.87½	3.50	1.90	2.40	2.65	3.00	2.00	1.80	2.17	1.76	2.40
July .....	2.81	2.25	3.20	3.25	1.80	2.35	2.79	3.00	2.00	2.00	2.15	1.82½	2.40
August .....	2.70	2.25	4.25	3.00	1.75	2.25	3.00	3.08	1.92	1.95	2.15	1.85	....
September .....	2.31	2.25	6.00	2.87½	1.85	2.50	3.19	3.20	1.90	2.55	2.12	1.85	....
October .....	2.25	2.25	9.00	2.87½	2.00	3.00	3.31	3.25	2.10	2.90	2.10	1.81	....
November .....	2.25	2.31	7.00	2.50	2.25	3.50	4.00	2.75	2.20	3.25	2.05	1.85	....
December .....	2.25	2.39	7.00	2.25	2.35	3.50	4.12½	2.50	2.25	3.20	1.97	1.90	....

Attention should be called to the peculiar conditions prevailing in the coke market in the last half of 1902 and the first half of 1903. In all this period coke prices were seriously affected by the extraordinary demand for coke caused by the scarcity of anthracite coal resulting from the great strike of anthracite coal miners which began in the spring of 1902 and was not settled until late in that year. For several months blast furnaces and foundries were greatly hampered in their operations by inability to secure a regular supply of fuel. Prompt furnace and foundry coke at this time sold as high as \$11 per ton at oven and it is possible that even a higher price may have been realized. Blast furnaces were often banked for a week or two awaiting coke deliveries, and many foundries ran intermittently. Coke was imported to some extent for the use of blast furnaces and foundries located near the seaboard, and foundry coke was shipped all the way to Chicago from Colorado. The quotations which are above given for this period are therefore to be regarded as to some extent conjectural.

## The German Visit of the Mechanical Engineers

BERLIN, August 16, 1912.—The proposed visit of the American Society of Mechanical Engineers to Germany next summer is attracting much attention in the German iron and machinery trades. The Verein Deutscher Ingenieure, upon whose invitation the visit is to be made, has prepared a provisional programme. According to this the Americans, after their arrival in Hamburg or Bremen, will go direct to Leipzig to attend the annual meeting of the Verein, which will be held June 23 to 25.

From Leipzig a visit of a day will probably be made to Dresden. After this the party will come to Berlin, where a few days will be devoted to seeing several of the great electrical and machinery shops. Then the Americans will be taken to the Rhenish-Westphalian iron district, where several of the more modern establishments will be visited. After that the party will proceed up the Rhine to Frankfort, thence to Wiesbaden, Heidelberg, Mannheim, Stuttgart, and Munich.

Further details, like the particular mills to be visited, have not yet been fixed. Some of the members of the Verein will accompany the Americans on their trip through Germany, and local members at the various points visited will take a hand in entertaining them and preparing visits to shops. The hope is expressed in the Verein that as many American engineers will take part in the visit as possible.

## Belgian Iron and Steel Production in 1911

Statistics gathered by the Iron Masters' Association of Clarleroi, as published in detail by the London Iron and Coal Trades Review, deal with the production of iron and steel in Belgium in 1911. The production of iron ore last year was but 150,000 metric tons while the imports were 5,678,008 tons. The imports were mainly from France (3,466,082 tons) and the Grand Duchy of Luxemburg (1,436,601 tons). The pig iron production in 1911 was 2,046,280 tons, against 1,852,090 tons in 1910 and 764,180 tons in 1901. The average number of blast furnaces in operation last year was 44, employing 4687 workmen. The exports of pig iron were 12,000 tons and the imports 693,000 tons.

The total production of finished iron and steel was 1,945,235 tons, of which steel constituted 1,654,965 tons. The output reported as steel castings was 64,460 tons. The total number of persons employed in iron and steel works in 1911 was 32,935, as compared with 31,246 in 1910.

The American Shipbuilding Company, Cleveland, Ohio, has received a contract from Captain John Mitchell, manager of the Cleveland Steamship Company, for a lake freighter to replace the steamer Gayley, which was lost on Lake Superior a few weeks ago. The vessel will be 545 ft. long with 58 ft. beam and 31 ft. deep. It will be of the Isherwood type of construction and will be built for delivery at the opening of navigation next year.

# The Iron and Metal Markets

## Great Activity in Pig Iron

### Higher Prices for 1913 Deliveries

#### Demand for Finished Material Well Sustained—Wire Products Advanced

Broadening activity in pig iron has been the pronounced feature of the market for the past week and the buying movement now under way is one of the largest in years. Prices are up in all districts and heavy sales have been made at the higher levels for delivery in the first quarter and the first half of next year.

Demand upon the foundry industry has increased so gradually in recent months that its volume, as revealed by this latest development in the pig iron market, has been underestimated. Several hundred thousand tons of Northern and Southern irons has been sold in the past ten days, the greater part of it for delivery in 1913. Cincinnati reports 100,000 tons sold in the week; Buffalo, 50,000 tons, and Chicago one of the largest weeks of the year.

A large factor in the buying in Central Western markets has been the iron taken by malleable and other foundries manufacturing railroad equipment. Car works\* have orders that will run them well into the winter and many foundries will be very busy in consequence. Pipe works have bought 30,000 to 40,000 tons of Southern iron on the \$12.50 Birmingham basis for No. 2, in addition to 60,000 tons reported last week. The \$12.50 price for next year is well established and some sales have been made by Southern furnaces at \$13 for the first quarter. Ohio furnaces have advanced foundry iron prices 25 to 50 cents.

In basic iron advances have been made in the South and East. One Eastern steel plant paid \$16.50 for 16,000 tons for the first quarter. A sale of 15,000 tons for first half was made at \$13 Birmingham. In the Pittsburgh district Bessemer iron has sold at \$14.75 at Valley furnace and basic is nominally \$14, though some makers ask \$14.50 for first quarter.

While pig iron output is increasing moderately—the labor and coke situations still preventing any large expansion—stocks continue to decrease. The whole amount in furnace yards, both steel works and merchant, is put at 1,200,000 tons, a reduction of about a million tons in 18 months.

British makers of ferromanganese have again put up the price \$2.50, after steel companies here had bought quite freely for 1913 at \$51 Baltimore.

The situation in finished material only accentuates what has existed in recent weeks. The Steel Corporation, with roundly 6,000,000 tons of unfilled orders, has specifications for 40 per cent of this tonnage. It is operating 95 per cent of its finishing capacity and 94 per cent of its ingot capacity.

The Steel Corporation's rail orders for 1913 are now about 350,000 tons. Other rail companies are negotiating also for next year's business, but practically no Bessemer rails are wanted. The Northern

Pacific has placed 10,000 tons of Mayari steel rails with the Pennsylvania Steel Company for delivery this year.

Prices for bars, plates and structural steel are unchanged, with the quotations of the leading interest about \$1 a ton below those of independent companies on the relatively limited amount of material it can take on for this year. Little has been done for 1913 as yet. The discouraging of premiums has tended to prevent precipitate covering for the distant future as fear of sharp advances has lessened. Store prices on the above three lines have advanced \$1 a ton at Chicago.

Milliken Brothers have just taken the largest contract yet let for transmission towers in California—18,000 tons. Fabricating companies continue to get good prices and in the East 1.40c., Pittsburgh, is a common basis, while considerable premiums are still paid in many cases.

A \$1 advance in wire products was made on Monday by the leading seller, bringing wire nails to \$1.70. Little \$1.65 business is done, and \$1.60 by independent sellers has practically disappeared.

Business in wrought pipe is making new records month by month. Stocks of merchant pipe were not replenished at the earlier advances and under the present pressure upon the mills prices are well sustained.

Tin plate sales could be made freely for next year at \$3.50. Producers are holding off, looking for an advance, based in part on an uncertain factor, the price of pig tin.

Exports continue to bring good prices, and German and British markets are strong at high levels. Middlesbrough warrants rose to 62s. 9d. (\$15.25) this week, or \$4 above the low point early in the year.

Some doubt is expressed of the ability of dock and transportation facilities on the lakes to handle all the ore shippers have planned to get down this year.

## A Comparison of Prices

Advances Over the Previous Week in Heavy Type.  
Declines in Italics.

At date, one week, one month and one year previous.

Pig Iron,	Per Gross Ton:	Aug. 28, Aug. 21, July 31, Aug. 30,			
		1912.	1912.	1912.	1911.
Foundry No. 2, standard, Philadelphia		\$16.00	\$16.00	\$15.75	\$15.00
Foundry No. 2, Valley furnace		14.00	14.00	13.50	13.50
Foundry No. 2, Southern, Cincinnati		15.25	15.00	14.75	13.50
Foundry No. 2, Birmingham, Ala.		12.00	11.75	11.50	10.25
Foundry No. 2, at furnace, Chicago*		15.50	15.50	15.00	14.50
Basic, delivered, eastern Pa.		16.50	16.00	15.75	14.75
Basic, Valley furnace		14.00	14.00	13.50	13.00
Bessemer, Pittsburgh		15.05	15.40	15.40	15.90
Malleable Bessemer, Chicago		15.50	15.50	14.50	14.50
Gray forge, Pittsburgh		14.40	14.40	14.15	13.90
Lake Superior charcoal, Chicago		16.25	16.25	16.25	16.50
<b>Billets, etc., Per Gross Ton:</b>					
Bessemer billets, Pittsburgh		22.50	22.50	21.50	21.00
Open hearth billets, Pittsburgh		23.00	23.00	22.00	21.00
Forging billets, Pittsburgh		29.00	29.00	28.00	26.00
Open hearth billets, Philadelphia		25.40	25.40	24.40	23.40
Wire rods, Pittsburgh		27.00	26.00	25.00	27.00
<b>Old Material, Per Gross Ton:</b>					
Iron rails, Chicago		16.25	16.00	16.00	14.00
Iron rails, Philadelphia		16.50	16.50	16.50	17.00
Car wheels, Chicago		14.00	14.00	13.50	13.00
Car wheels, Philadelphia		14.00	14.00	14.00	13.00
Heavy steel scrap, Pittsburgh		13.75	13.75	13.25	13.00
Heavy steel scrap, Chicago		12.25	12.00	11.50	11.00
Heavy steel scrap, Philadelphia		14.50	14.00	13.50	13.25

\*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.



Finished Iron and Steel, Per Pound to Largest Buyers:	1912.	1912.	1912.	1911.
	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill...	1.25	1.25	1.25	1.25
Iron bars, Philadelphia.....	1.40	1.37½	1.32¼	1.27½
Iron bars, Pittsburgh.....	1.40	1.40	1.35	1.25
Iron bars, Chicago.....	1.40	1.40	1.40	1.20
Steel bars, Pittsburgh.....	1.30	1.30	1.25	1.20
Steel bars, tidewater, New York	1.46	1.46	1.41	1.36
Tank plates, Pittsburgh.....	1.35	1.35	1.30	1.30
Tank plates, tidewater, New York	1.50	1.51	1.46	1.46
Beams, Pittsburgh.....	1.35	1.35	1.30	1.35
Beams, tidewater, New York...	1.50	1.51	1.46	1.51
Angles, Pittsburgh.....	1.35	1.35	1.30	1.35
Angles, tidewater, New York...	1.50	1.51	1.46	1.51
Skelp, grooved steel, Pittsburgh	1.25	1.25	1.25	1.20
Skelp, sheared steel, Pittsburgh	1.30	1.30	1.30	1.30

Sheets, Nails and Wire, Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.05	2.05	2.00	1.95
Wire nails, Pittsburgh.....	1.70	1.65	1.65	1.65
Cut nails, Pittsburgh.....	1.60	1.60	1.55	1.60
Fence wire, ann'led, 0 to 9, Pgh.	1.50	1.45	1.45	1.50
Barb wire, galv., Pittsburgh...	2.00	1.95	1.95	2.00

Coke, Connellsville, Per Net Ton at Oven:	1912.	1912.	1912.	1911.
	Cents.	Cents.	Cents.	Cents.
Furnace coke, prompt shipment	\$2.25	\$2.25	\$2.25	\$1.50
Furnace coke, future delivery..	2.25	2.25	2.25	1.60
Foundry coke, prompt shipment	2.40	2.40	2.40	1.85
Foundry coke, future delivery..	2.50	2.50	2.50	2.10

Metals, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York.....	17.75	17.65	17.70	12.75
Electrolytic copper, New York.	17.65	17.60	17.60	12.50
Spelter, St. Louis.....	7.05	6.95	7.10	5.90
Spelter, New York.....	7.20	7.10	7.25	6.05
Lead, St. Louis.....	4.57½	4.40	4.57½	4.42½
Lead, New York.....	4.65	4.50	4.70	4.50
Tin, New York.....	40.25	46.20	45.50	42.87½
Antimony, Hallett, New York...	7.87½	7.87½	8.00	7.75
Tin plate, 100-lb. box, New York	\$3.74	\$3.74	\$3.74	\$3.94

## Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

**Plates.**—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.35c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¾ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft., down to the weight of 3-16 in., take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in.....	.10
Gauges under 3-16 in. to and including No. 8.....	.15
Gauges under No. 8 to and including No. 9.....	.25
Gauges under No. 9 to and including No. 10.....	.30
Gauges under No. 10 to and including No. 12.....	.40
Sketches (excluding straight taper plates) 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over.....	.20
Boiler and flange steel.....	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel.....	.30
Marine steel.....	.40
Locomotive firebox steel.....	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.....	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inc.	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inc.	.50
Cutting to lengths or diameters under 1 ft.....	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

**Structural Material.**—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. and over, and zeos, 3 in. and over, 1.35c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.....	1.40 to 1.45
H-beams over 18 in.....	1.40 to 1.45
Angles over 6 in.....	1.40 to 1.45
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909.....	1.40 to 1.45
Tees, 3 in. and up.....	1.40 to 1.45
Angles, channels and tees, under 3 in. plus full extras as per steel bar card Sept. 1, 1909	1.40 to 1.45
Deck beams and bulb angles.....	1.65 to 1.70
Hand rail tees.....	2.10 to 2.25
Checkered, trough and corrugated floor plates.	2.25 to 2.50

## Extras for Cutting to Length.

	Cents per lb.
Under 3 ft., to 3 ft. inclusive.....	.25
Under 2 ft., to 1 ft. inclusive.....	.50
Under 1 ft.....	1.55
No charge for cutting to lengths 3 ft. and over.	

**Wire Rods and Wire.**—Bessemer, open-hearth and chain rods, \$27. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, \$1.50; galvanized, \$1.80. Galvanized barb wire, to jobbers, \$2; painted, \$1.70. Wire nails to jobbers, \$1.70.

**Sheets.**—Makers' prices for mill shipments on sheets of U. S. standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows:

## Blue Annealed Sheets.

	Cents per lb.
Nos. 3 to 8.....	1.45
Nos. 9 and 10.....	1.50
Nos. 11 and 12.....	1.55
Nos. 13 and 14.....	1.60
Nos. 15 and 16.....	1.70

## Box Annealed Sheets, Cold Rolled.

Nos. 10 to 12.....	1.70 to 1.75
Nos. 13 and 14.....	1.75 to 1.80
Nos. 15 and 16.....	1.80 to 1.85
Nos. 17 to 21.....	1.85 to 1.90
Nos. 22, 23 and 24.....	1.90 to 1.95
Nos. 25 and 26.....	1.95 to 2.00
No. 27.....	2.00 to 2.05
No. 28.....	2.05 to 2.10
No. 29.....	2.10 to 2.15
No. 30.....	2.20 to 2.25

## Galvanized Sheets of Black Sheet Gauge.

Nos. 10 and 11.....	2.15 to 2.20
Nos. 12, 13 and 14.....	2.25 to 2.30
Nos. 15 and 16.....	2.40 to 2.45
Nos. 17 to 21.....	2.55 to 2.60
Nos. 22, 23 and 24.....	2.65 to 2.70
Nos. 25 and 26.....	2.85 to 2.90
No. 27.....	3.00 to 3.05
No. 28.....	3.15 to 3.20
No. 29.....	3.25 to 3.30
No. 30.....	3.45 to 3.50

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following:

## Corrugated Roofing Sheets by Weight.

Effective April 18, 1912, the rates for painted and formed roofing sheets, per 100 lb., are based on the following extras for painting and forming over prices for corresponding gauges in black and galvanized sheets:

Painting.	Gauges, cents per 100 lb.			
	29	25 to 28	19 to 24	12 to 18
Regular or oiling.....	.15	.10	.05	.05
Graphite, regular.....	.25	.15	.10	.10
Forming.				
2, 2½, 3 and 5 in. corrugated	0.05	0.05	0.05	0.05
2 V-crimped, without sticks..	0.05	0.05	0.05	...
¾ to 1½ in. corrugated.....	0.10	0.10	0.10	...
3 V-crimped, without sticks...	0.10	0.10	0.10	...
Pressed standard seam, with cleats.....	.15	.15	...	...
Plain roll roofing, with or without cleats.....	0.15	0.15	.15	...
Plain brick siding.....	.20	.20	...	...
3-15 in. crimped.....	0.20	0.20	.20	...
Weatherboard siding.....	.25	.25	...	...
Beaded ceiling.....	.25	.25	...	...
Rock, face brick and stone siding.....	.25	.25	...	...
Roll and cap roofing, with caps and cleats.....	0.25	0.25	...	...
Roofing valley, 12 in. and wider.....	.25	.25	...	...
Ridge roll and flashing (plain or corrugated).....	.65	.65	.65	...

**Wrought Pipe.**—The following are the jobbers' carload discounts (card weight) on the Pittsburgh basing card on steel pipe, in effect from July 24, 1912; iron pipe from August 12, 1912, one point greater being allowed on merchant weight:

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
¾ and 1 in.....	72	52	67	51
1 in.....	73	63	70	57
1½ in.....	76	66	73	62
2 to 3 in.....	80	73	74	63
1½ in.....	77	70	70	61
2 in.....	77	70	70	61
2½ to 4 in.....	79	72	72	64
4½ to 6 in.....	78	70	71	63
7 to 12 in.....	76	66	69	59
13 to 15 in.....	53	..	45	..
Plugged and Reamed.				
1 to 1½ in., butt weld.....	77	69	71	60
2 to 3 in., butt weld.....	78	71	72	61
2 in., lap weld.....	75	68	68	59
2½ to 4 in., lap weld.....	77	70	70	62

Butt Weld, extra strong, plain ends, card weight.				
1/8, 1/4, 3/8 in.	68	58	63	53
1/2 in.	73	67	68	61
3/4 to 1 1/2 in.	77	71	72	63
2 to 3 in.	78	72	73	64

Lap Weld, extra strong, plain ends, card weight.				
1 1/2 in.	74	68	62	54
2 in.	74	68	69	61
2 1/2 to 4 in.	76	70	71	64
4 1/2 to 6 in.	75	69	70	63
7 to 8 in.	68	58	63	53
9 to 12 in.	63	53	58	48

Butt Weld, double extra strong, plain ends, card weight.				
1/8 in.	63	57	58	50
1/4 to 1 1/2 in.	66	60	61	53
2 to 2 1/2 in.	68	62	63	55

Lap Weld, double extra strong, plain ends, card weight.				
2 in.	64	58	59	50
2 1/2 to 4 in.	66	60	61	55
4 1/2 to 6 in.	65	59	60	54
7 to 8 in.	58	48	53	43

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

**Boiler Tubes.**—Discounts on lap welded steel and standard charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		Standard Charcoal Iron.	
1 3/4 to 2 1/4 in.	63	1 1/2 in.	46
2 1/2 in.	65 1/2	1 3/4 to 2 1/4 in.	48
2 3/4 to 3 1/4 in.	70 1/2	2 1/2 in.	53
3 1/2 to 4 in.	73	2 3/4 to 3 1/4 in.	55 1/2
5 to 6 in.	65 1/2	3 1/2 to 5 in.	58
7 to 13 in.	63	Locomotive and steamship special grades bring higher prices.	

2 1/2 in. and smaller, over 18 ft., 10 per cent. net extra.

2 3/4 in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

## Pittsburgh

PITTSBURGH, PA., August 28, 1912.

The advances of the week in finished products are \$1 a ton in wire, \$2 a ton in boiler and structural rivets and about 10 per cent. in bolts. Specifications against contracts for finished iron and steel continue to come into the mills at an unprecedented rate and the matter of deliveries now largely controls prices. Mills that can make prompt shipment have no trouble in getting at least \$2 a ton above the regular market on nearly all forms of finished material. Consumers who must have quick deliveries simply have to pay whatever prices sellers ask. Pipe mills are congested with tonnage and one leading maker has notified all its selling agents not to accept any new business for delivery inside of three months. Shipments of iron and steel are exceptionally heavy, as mills are making special efforts on account of the car shortage already being felt. Early advances are looked for in tin plate, pipe and probably one or two other lines. The scrap market is looking much better, the demand being quite active and prices showing a stronger tone than for some time. Coke is rather quiet.

**Fig Iron.**—In the early part of last week a local steel casting concern bought about 2500 tons of standard Bessemer iron at \$14.50, at Valley furnace, and another consumer bought 5000 to 6000 tons for delivery over the remainder of the year at the same price. It is doubtful, however, whether these purchases could be duplicated to-day, as all sellers of Bessemer iron are now quoting \$14.75 to \$15, at furnace. Some small sales of Bessemer iron are reported at \$14.75. Some inquiry has come out for pig iron for delivery in first quarter and first half of next year, but so far only a small tonnage has been sold. We note a sale of 500 tons of No. 2 foundry for delivery in first quarter at \$14.25, Valley furnace. No. 4 furnace of the Shenango Furnace Company, Sharpsville, Pa., has been relined, new blowing engines have been installed and the furnace will likely resume blast this week. Alice furnace of the Valley Mold & Foundry Company, also at Sharpsville, will likely blow in within the next month. Mattie furnace of the Girard Iron Company, Girard, Ohio, will also likely blow in early in September, having covered for its supply of coke. The Republic Iron & Steel Company reports sales of 10,000 tons of Southern No. 2 foundry iron for delivery over third quarter at \$12.50, Birmingham, and other sales aggregating probably 60,000 tons for first quarter at \$13. As far as known none of this iron is coming into the Pittsburgh district. We quote the local pig iron market as follows: Standard Bessemer iron, \$14.75; malleable Bessemer, \$13.75 to \$14; No. 2 foundry, \$14; basic, \$14, and gray forge, \$13.50 to \$13.75, all at Valley furnace, the freight rate to Pittsburgh being 90c. a ton.

**Steel Billets and Sheet Bars.**—Reports are that the supply of open hearth billets and sheet bars is improving to some extent and consumers are now getting better deliveries. An independent open hearth steel plant reports a sale of 1000 tons of billets at \$22.50 at mill and 500 tons of sheet bars at \$22.75. We also note a sale of about 1100 tons of open hearth billets for delivery over the remainder of the year at about \$22.50 at maker's mill. Where mills are able to promise reasonably prompt shipment they are able to get slight premiums over these prices. The whole steel market is very strong. We quote: Bessemer billets, \$22.50 to \$23; Bessemer sheet bars, \$23 to \$23.50; open hearth billets, \$23 to \$23.50, and open hearth sheet bars, \$23 to \$24. f.o.b. mill, Pittsburgh or Youngstown. Axle billets are very firm at \$27 to \$28; forging billets for general purposes, \$29 to \$30, f.o.b. cars at mill, Pittsburgh.

**Ferroalloys.**—Effective August 26, the price of 80 per cent. English ferromanganese was advanced to \$53.50, Baltimore, for shipment after January 1. This is the highest price quoted since October, 1907, and is due partly to the very heavy consumption and partly to labor troubles and scarcity of manganese ores. Some consumers who find they did not buy enough are coming in the market for an occasional carload or two for prompt delivery, for which they are paying \$52 to \$53, Baltimore. The freight rate for delivery in the Pittsburgh district from Baltimore is \$1.95 a ton. Sales of carloads of ferrosilicon are being made for prompt shipment at the full price of \$72.50, Pittsburgh, but most consumers are pretty well covered for the remainder of this year. We quote 50 per cent. ferrosilicon in lots up to 100 tons at \$72.50; over 100 tons to 600 tons, \$71.50, and over 600 tons, \$70.50, Pittsburgh. The lower grades are ruling at \$20 for 10 per cent., \$21 for 11 per cent. and \$22 for 12 per cent., f.o.b. cars at Ashland, Ky., or Jackson, Ohio. On ferrotitanium we quote 8c. per lb. for carload lots, 10c. per lb. in 2000-lb. lots and over, and 12 1/2c. per lb. in lots up to 2000 lb.

**Wire Rods.**—In sympathy with the advance of \$1 a ton on wire products, rods have been marked up and we now quote Bessemer, open hearth and chain rods at \$27, Pittsburgh. Nearly all consumers covered some time ago at prices ranging from \$25.50 to \$26 and new inquiry at present is light. Specifications against such contracts are coming in quite freely.

**Muck Bar.**—There is inquiry for more muck bar than is being offered and prices are very strong. We quote best grades made from all pig iron at \$30.50 delivered at buyer's mill in this district.

**Skelp.**—The market is active and several makers report they have about all the business on their books they can handle this year. We quote grooved steel skelp at 1.25c. to 1.30c.; sheared steel skelp at 1.30c. to 1.35c.; grooved iron skelp, 1.70c. to 1.75c., and sheared iron skelp, 1.75c. to 1.80c., delivered at buyer's mill in the Pittsburgh district.

**Steel Rails.**—Many small orders are being placed by railroads that find they did not buy heavily enough some time ago, and such purchases aggregate a considerable tonnage. The Carnegie Steel Company has recently taken some large orders for standard sections of steel rails and for light rails for shipment abroad. It is making large shipments of open hearth rails, mostly abroad, from its Ohio works at Youngstown, and that plant will likely continue on open hearth rails over the remainder of this year. Both the new demand and specifications for light rails are heavy, the same company having received over 5000 tons in the past week. We quote splice bars at 1.50c. per lb., and rails as follows: Standard sections, 1.25c. per lb.; 8 and 10-lb., 1.34c.; 12 and 14-lb., 1.29c.; 16 and 20-lb., 1.24c.; 25, 30, 35, 40 and 45-lb., 1.19c., in carload lots, f.o.b. Pittsburgh.

**Car Wheels and Axles.**—The new demand for car wheels for freight and passenger service and also for axles is very heavy. The Carnegie Steel Company is operating its Schoen steel car wheel works at McKees Rocks to full capacity and has orders ahead to take its entire output for practically the remainder of this year. We quote 33-in. solid rolled steel wheels for freight service at \$14.50 to \$15 per wheel, and 36-in. solid rolled steel wheels for passenger train service at \$18 to \$18.50 per wheel. The new demand for axles is also very heavy and we quote forged steel freight car axles at 1.50c. to 1.55c. base, per lb.

**Structural Material.**—A good deal of local work is coming up, but fabricating concerns report they are about filled for 1912 and are either not bidding on new jobs wanted this year, or else are naming prices that they know will not take the business. The American Bridge Company has taken 500 tons for a new steel



building for the Pennsylvania Lubricating Company in this city and the McClintic-Marshall Construction Company has taken 1000 tons of reinforcing steel cores for concrete columns for a new warehouse for E. Snellenburg & Co. in Philadelphia, 300 tons for extensions to steel buildings for the Mount Vernon Car Company and 250 tons for extensions to buildings for the American Car & Foundry Company at St. Louis. The Jones & Laughlin Steel Company is now quoting shapes at 1.40c. minimum, while the Carnegie Steel Company is still quoting at 1.35c., but is not able to take on any new business for delivery inside of three months. We quote beams and channels up to 15 in. at 1.35c. to 1.40c., Pittsburgh.

**Sheets.**—Advices are that the recent advance of \$1 a ton in prices of blue annealed sheets is being firmly held, and some mills that are able to make fairly prompt shipments can get premiums from customers of \$1 to \$2 a ton over the regular price of 1.50c. for No. 10. It has been a long time since the sheet trade has been in so satisfactory a condition, the new demand being very heavy and specifications against contracts coming in at such an enormous rate. All the mills are back in deliveries ranging from three to ten weeks. In fact, the only complaint received from sheet makers is that present prices might be a little better when the high figures being charged for steel are considered. All the sheet mills are running to as full capacity as the supply of steel and labor will permit. Prices are firm on the basis of 1.50c. for No. 10 blue annealed, 2.05c. for No. 28 black and 3.15c. for No. 28 galvanized in carload lots, f.o.b. mill, jobbers charging the usual advances for small lots from store.

**Tin Plate.**—Reports are still current that an advance in prices will be made at an early date, but it is not likely that any change will be made before the latter part of September or early in October. The new demand for tin plate is fairly heavy. A number of consumers who thought they had fully covered their requirements for all of this year are consuming more than they expected, and have had to come in the market again. All the mills are running to as full capacity as the supply of labor and steel will permit. The market is very firm on the basis of \$3.50 per base box for 14 x 20 coke plates.

**Steel Plates.**—The only car order of note reported during the week is one from the Great Northern Railroad for 3500 freight cars, placed with the Haskell & Barker Car Company. The Duluth, South Shore & Atlantic has placed 100 cars with the American Car & Foundry Company. All the plate mills are sold up over the next two or three months, and premiums of \$2 to \$3 a ton are being paid for prompt shipment. We quote ¼ in. and heavier plates at 1.35c. to 1.40c., f.o.b. Pittsburgh.

**Bolts and Rivets.**—Owing to the enormously heavy demand and the higher cost of steel, the makers have made another advance, effective August 21. The advance in rivets is \$2 a ton and in bolts 7½ and 10 per cent. All the makers are much behind in deliveries, some of them stating they are sold up over the rest of this year. We now quote button head structural rivets at \$1.90 per 100 lb. base, and cone head boiler rivets at \$2 in carloads only, an advance of 10c. to 15c. being charged for smaller lots. New discounts on bolts are as follows: Coach and lag screws, 80 and 12½ per cent. off; small carriage bolts, cut threads, 75, 10 and 7½ per cent. off; small carriage bolts, rolled threads, 75, 10, 10 and 2½ per cent. off; large carriage bolts, 70, 10 and 5 per cent. off; small machine bolts, rolled threads, 75, 10, 10 and 7½ per cent. off; small machine bolts, cut threads, 75, 10, 10 and 2½ per cent. off; large machine bolts, 70, 10 and 10 per cent. off; square hot-pressed nuts, blank and tapped, \$6 off; and hexagon nuts, \$6.70 off. These prices are in lots of 300 lb. or over, delivered within a 20c. freight radius of maker's works.

**Hoops and Bands.**—A large amount of new business is being placed and specifications against contracts are coming in freely. One or two leading makers of bands are holding firmly at 1.35c. All are much behind in deliveries. We quote steel bands at 1.30c., with extras as per the steel bar card, and hoops at 1.40c. to 1.45c., f.o.b. at mill, the latter price being obtained where reasonably prompt shipments are specified.

**Shafting.**—A leading automobile maker has placed a contract with a local interest for 2000 tons of shafting, and it is said the full price of 64 per cent. was obtained. The general demand is fairly active and specifications against contracts are satisfactory. There is some intimation of another advance in prices owing to the higher cost of steel. We quote cold rolled shafting at 64 per cent. off in carload and larger lots and 59 per cent. off list in less than carloads delivered in base territory.

**Spelter.**—Prices are slightly higher. We quote prime grades of Western at 7c. to 7.05c., East St. Louis, equal to 7.12½c. to 7.17½c., Pittsburgh. A sale of 200 tons for September delivery was made last week at 6.95c., East St. Louis.

**Railroad Spikes.**—Specifications against contracts showed a slight falling off the past week, but are still anywhere from six to eight weeks or longer back in deliveries. There is a great scarcity in supply of small railroad and boat spikes. Prices are very strong and we quote railroad spikes, base size, 5½ x 9/16 in., at \$1.65 and small railroad and boat spikes at \$1.70 to \$1.75 per 100 lb., f.o.b. Pittsburgh. Some makers of spikes that are filled up for three months or more are naming slightly higher prices.

**Wire Products.**—On August 24 the leading makers of wire products announced an advance in prices of \$1 a ton, effective from that date. The new demand for wire and wire nails has been fairly active recently, and specifications against contracts have been coming in quite freely. The mills anticipate a large fall business and jobbers are now laying in stocks to meet the expected heavy demand. We quote wire nails at \$1.70 per keg; cut nails, \$1.60; galvanized barb wire, per 100 lb., \$2; painted, \$1.70; annealed fence wire, \$1.50, and galvanized fence wire, \$1.80, f.o.b. Pittsburgh, usual terms, freight added to point of shipment.

**Merchant Steel.**—The new demand is fairly active and consumers are specifying freely against contracts. Shipments by the mills this month will show a slight increase over July. Prices are strong and we quote: Iron finished tire, 1½ x ¾ in. and larger, 1.30c., base; under ¾ in., 1.40c.; planished tire, 1.50c.; channel tire, ¾, ¾ and 1 in., 1.80c.; 1½ in. and larger, 1.65c.; toe calk, 1.85c., base; flat sleigh shoe, 1.35c.; concave and convex, 1.70c.; cutter shoes, tapered or bent, 2.30c.; spring steel, 1.90c.; machinery steel, smooth finish, 1.70c., all f.o.b. cars, Pittsburgh.

**Merchant Pipe.**—Every month since last February has shown an increase in the pipe trade in orders and August will turn in the heaviest month's business in actual orders booked for any month this year. A peculiar feature of the trade just now is that the heavy volume of business is from general current orders, no large oil or gas lines having been placed for some time. All the mills are far back in deliveries, and with business already booked and what will come in naturally from time to time the leading makers have their output practically disposed of for the rest of this year. There is still some talk of an advance in prices of both iron and steel pipe, to come about September 1. The discounts on steel pipe as of July 24 and iron pipe as of August 12 are reported as being very firmly held.

**Boiler Tubes.**—The makers of seamless and welded boiler tubes report that the new demand for locomotive and merchant tubes is still very active, especially for seamless. All makers are back in deliveries ranging from six weeks to three months. One leading maker of seamless tubing has already booked more actual orders than in all of last year. In referring last week to the fact that the Pittsburgh Steel Company had bought some German patents for making seamless steel tubing, it was inadvertently stated that it is at present making 1500 tons per month of Shelby steel tubing. The National Steel Company is the only maker of Shelby tubing. An advance of 1c. per ft. has been made in prices of locomotive tubes, these being sold at net prices. Discounts on charcoal iron and steel tubes are reported as being firmly held.

**Coke.**—The coke market is rather quiet, in strong contrast with the recent activity. Consumers seem to be pretty well covered. There has been some inquiry from dealers and from furnace interests for next year. While \$2.50 at oven has been talked of as the price of furnace coke for first half, pig iron makers say there will have to be considerable improvement in pig iron prices before they can pay that much for coke. Only 2000 to 3000 tons of furnace coke is reported sold for prompt shipment at \$2.25 per net ton at oven. The new demand for foundry coke is quiet, as most consumers are covered over the rest of this year; we quote 72-hr. of standard grades at \$2.40 to \$2.50 for prompt shipment and \$2.50 to \$2.75 over the remainder of this year. We quote standard makes of blast furnace coke for prompt shipment at \$2.15 to \$2.25 and for delivery over the rest of this year at \$2.25 per net ton at oven. The output of coke in the upper and lower Connellsville regions last week was 374,101 tons, a decrease over the previous week of over 11,000 tons.

**Iron and Steel Scrap.**—On Pennsylvania Railroad lists scrap bids are to close September 4 and old rail bids September 5. The lists are larger than usual and the awards are awaited with much interest, as the prices named will give a pretty clear idea of the actual

market. The general inquiry for scrap is good, the consumption being enormously heavy and will continue so for months. Dealers therefore feel that prices will improve and they are not anxious to sell except at full market prices. Borings and turnings are quiet, with prices a little easier, as the West Penn Steel Company, Brackenridge, Pa., has an embargo on borings and turnings while the Allegheny Steel Company, also at Brackenridge, and the leading consumer of borings and turnings, is reported filled up for about three months. There is some movement in low phosphorus melting stock, one consumer being credited with buying about 1000 tons at about \$16.25 delivered. Dealers will not sell selected heavy steel scrap below \$13.75, but, on the other hand, some mills will not pay this price, claiming it is too high. Dealers quote as follows, per gross ton:

Heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen and Pittsburgh delivery	\$13.75 to \$14.00
No. 1 foundry cast	13.25 to 13.50
No. 2 foundry cast	12.00 to 12.25
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	12.25 to 12.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	15.00 to 15.25
No. 1 railroad malleable stock	13.00 to 13.25
Grate bars	9.75 to 10.00
Low phosphorus melting stock	16.00 to 16.25
Iron car axles	24.50 to 25.00
Steel car axles	16.50 to 16.75
Locomotive axles	25.00 to 25.50
No. 1 busheling scrap	12.50 to 12.75
No. 2 busheling scrap	8.50 to 8.75
Old car wheels	14.00 to 14.25
*Cast iron borings	9.75 to 10.00
*Machine shop turnings	10.50 to 10.75
†Sheet bar crop ends	14.75 to 15.00
Old iron rails	15.75 to 16.00
No. 1 R. R. wrought scrap	14.75 to 15.00
Heavy steel axle turnings	11.00 to 11.25
Stove plate	10.25 to 10.50

\*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

## Chicago

CHICAGO, ILL., August 27, 1912.

Reliable information indicates that but little of the important rail tonnage pending in this market has actually been placed up to this time, and the amount that will finally be ordered can only be approximated. The expectation is that about 80,000 tons will be purchased for the Chicago & Northwestern and the Chicago, St. Paul, Minneapolis & Omaha, about 50,000 tons for the Chicago, Burlington & Quincy and similar amounts for the Chicago, Milwaukee & St. Paul and the Atchison, Topeka & Santa Fe. All of this business may not be closed for at least two weeks. The pending negotiations covering from 15,000 to 20,000 tons of rails for the Great Northern and Northern Pacific Railroad are expected to result in the placing of orders in the coming week. In this territory the situation in plates, structural shapes and bars continues about as it has been for several weeks, with specifications and new business in August showing a slight increase over the figures for July. It is possible to obtain a limited amount of plates from certain mills in the Pittsburgh and Eastern districts for delivery within three or four weeks, but apart from this consumers are compelled to depend upon shipments from store to meet immediate requirements. Bars show an increasingly restricted market with advancing prices. Advances are also noted for rivets, bolts and screws. Activity in the local pig iron market, particularly as regards Lake irons, has developed into a buying movement of considerable proportions. Melters of malleable iron have been buying generously, the firm adherence of local furnaces to higher prices for first quarter iron having encouraged various buyers to crowd into last quarter shipment as heavy tonnages as furnaces would accept. Numerous sales are also being made for first quarter shipment, and at least one Southern furnace has taken business for that delivery at \$13, Birmingham.

**Pig Iron.**—The firmness with which local furnaces have been enabled to maintain both prices for prompt shipment and the premium for first quarter delivery has augmented a very general activity into a buying movement such as other pig iron centers have been experiencing. Gray iron foundries have been purchasers of considerable amounts, but the larger buying has been done by melters of malleable Bessemer. Business of this character is indicated by pending inquiries for 3000, 1000 and 600 tons respectively and by sales of 6000 tons at Milwaukee and 3000 tons at St. Louis. Other transactions of similar character are noted. Interest in first quarter shipment has broadened materially and a con-

siderable part of the business placed is for that delivery. Some melters, however, are seeking to avoid the premium asked for that shipment and are specifying deliveries in the remainder of the year. In the South there is still a tendency to avoid first quarter business, but at least one Birmingham brand has been sold for delivery in both the last quarter and first quarter, on the basis of \$13 for No. 2. For prompt shipment iron the general market is \$12.50, Birmingham, though some high phosphorus irons are still available at \$12, while at the same time other Southern irons graded as No. 3 foundry have brought \$12.50. Local irons continue on the basis of \$15.50 at furnace for prompt shipment and \$16 for first quarter. At Milwaukee a delivered price is being made equivalent to the Chicago furnace price plus freight of 50c. We quote local irons, f.o.b. furnace, the average switching charge to Chicago foundries being nearly 50c. per ton. Other quotations are for Chicago delivery on prompt shipments as follows:

Lake Superior charcoal	\$16.25 to \$16.75
Northern coke foundry, No. 1	16.00
Northern coke foundry, No. 2	15.50
Northern coke foundry, No. 3	15.00
Northern Scotch, No. 1	16.50 to 17.00
Southern coke, No. 1 foundry and No. 1 soft	16.85
Southern coke, No. 2 foundry and No. 2 soft	16.35
Southern coke, No. 3	15.85
Southern coke, No. 4	15.35
Southern gray forge	14.85
Southern mottled	14.85
Malleable Bessemer	15.50
Standard Bessemer	16.75
Basic	15.50
Jackson County and Kentucky silvery, 6 per cent.	18.40
Jackson County and Kentucky silvery, 8 per cent.	19.40
Jackson County and Kentucky silvery, 10 per cent.	20.40

**Rails and Track Supplies.**—Makers of rails are particularly interested in the tonnage expected from this market resulting from general inquiries now pending to cover the requirements of all of the principal western trunk lines. The aggregate under consideration is from 300,000 to 325,000 tons. Authoritative statements indicate that no orders have been placed as yet by the Chicago & Northwestern, the Chicago, Burlington & Quincy, the Great Northern, or the Northern Pacific, and at least two weeks is likely to elapse before contracts are closed. We quote standard railroad spikes at 1.75c., base; track bolts with square nuts, 2.10c. to 2.15c., base, all in carload lots, Chicago; tie plates, \$30 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45 lb., 1.20c. to 1.25c.; 16 to 20 lb., 1.25c. to 1.30c.; 12 lb., 1.30c. to 1.35c.; 8 lb., 1.35c. to 1.40c.; angle bars, 1.50c., Chicago.

**Structural Material.**—In addition to 3500 cars recently secured, the Haskell & Barker Car Company will build 200 refrigerator cars for the Cold Blast Transportation Company, Chicago. The Canadian Pacific Railway has ordered 3000 freight cars from Barney & Smith Car Company, and the Chicago, Milwaukee & St. Paul has ordered 500 Hart ballast cars from the American Car & Foundry Company. A number of railroads, realizing the imminence of a car shortage, are repairing extensively and orders for a large number of center sills are noted. Locomotive orders of the past week include 25 for the Chicago, Burlington & Quincy, placed with the Baldwin Locomotive Works, and 20 for the Wabash, ordered from the American Locomotive Company. Contracts for fabricated material in the past week totaled over 8000 tons, in which the principal item was 3200 tons for the Granby Smelting & Mining Company, East St. Louis, to be furnished by the American Bridge Company. The same company will fabricate 1486 tons for the Barnheisel Building, Chicago, and 1721 tons for a pier at San Diego, Cal. It will also supply 108 tons for a bridge span for the Oro Development Company, Belden, Cal., and 195 tons for the new bolt plant of E. B. Lanman & Co., East Chicago. The steel for the Barnard & Leas Mfg. Company buildings at Moline, Ill., amounting to 201 tons was awarded to the Joliet Bridge & Iron Company, and 125 tons for the Armory Building, San Francisco, went to the McClintic-Marshall Construction Company. The Chicago, Milwaukee & St. Paul awarded 416 tons of bridge steel to the Milwaukee Bridge Company and 575 tons to the Pennsylvania Steel Company. An evidence of the mill situation as regards structural material is shown by the asking of store prices for a Chicago building requiring 1300 tons. We quote for Chicago delivery, mill shipment, plain shapes, 1.58c. and from store 1.95c.

**Plates.**—Certain mills in the Pittsburgh district are able to offer deliveries of sheared plates in certain sizes in three weeks. This is in distinct contrast to the general situation, and jobbers who are supplying the greater part of immediate delivery requirements still find



themselves from ten days to two weeks behind. We quote for mill shipment, Chicago delivery, 1.58c., and from store 1.95c.

**Sheets.**—Some inquiry is being made by users of sheets regarding quotations for first quarter delivery, but in contrast some sheet mills have not yet announced their basis for quoting on last quarter business. The situation with respect to deliveries is relieved somewhat by the fact that certain mills which are out of the market on blue annealed can offer deliveries on black and galvanized sheets in from five to six weeks, while the contrary obtains with other mills which are sold up on galvanized sheets. Quotations are unchanged for Chicago delivery, as follows: Carload lots, from mill, No. 28 black sheets, 2.23c.; No. 28 galvanized, 3.33c.; No. 10 blue annealed, 1.68c. Prices from store are: No. 10, 2.05c.; No. 12, 2.10c.; No. 28 black, 2.55c., and No. 28 galvanized, 3.65c.

**Bars.**—In this market the prevailing price for bar iron continues at 1.45c., with the possibility still remaining of placing desirable specifications at from 50c. to \$1 a ton below that figure. From six weeks to two months are required for delivery. Practically all of the new orders for steel bars in this market are being placed on a premium basis and 1.55c. and 1.60c. Chicago are the prevailing quotations. We quote as follows: Bar iron, 1.40c. to 1.45c.; hard steel bars, 1.35c.; soft steel bars, 1.48c. to 1.55c., and from store, soft steel bars, 1.85c., Chicago.

**Cast Iron Pipe.**—The most important letting of cast iron pipe in the past week involved 1650 tons at La Crosse, Wis. At Crete and Bridgeport, Ill., contracts were awarded totaling 600 tons. We quote as follows, per net ton, Chicago: Water pipe, 4 in., \$30; 6 to 12 in., \$28; 16 in. and up, \$27, with \$1 extra for gas pipe.

**Old Material.**—Market quotations for scrap continue to follow the trend of prices for finished material, despite a somewhat restricted movement. The strength of the market is supported by the scarcity of new offerings of old material from railroads and other sources. The railroad lists to be closed in the current week include only 250 tons from Chicago & Western Illinois, and 1500 tons from the Chicago, Rock Island & Pacific Railroad. Consumers' prices continue to be slightly below the level upon which dealer's transactions are based, a condition arising very largely from the fact that present needs do not compel melters to buy freely. In the territory immediately surrounding Chicago some relief from the scarcity of common labor has been felt, the result apparently of increased immigration. We quote for delivery at buyer's works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton.	
Old iron rails	\$16.25 to \$16.75
Old steel rails, rolling	14.25 to 14.75
Old steel rails, less than 3 ft.	13.00 to 13.50
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	14.00 to 14.50
Heavy melting steel scrap	12.25 to 12.75
Frogs, switches and guards, cut apart	12.25 to 12.75
Shoveling steel	12.00 to 12.50
Steel axle turnings	9.75 to 10.25
Per Net Ton.	
Iron angles and splice bars	\$14.75 to \$15.25
Iron arch bars and transoms	16.25 to 16.75
Steel angle bars	11.50 to 12.00
Iron car axles	20.00 to 20.50
Steel car axles	16.00 to 16.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	11.50 to 12.00
Cut forge	11.50 to 12.00
Steel knuckles and couplers	11.50 to 12.00
Steel springs	12.00 to 12.50
Locomotive tires, smooth	13.00 to 13.50
Machine shop turnings	7.50 to 8.00
Cast and mixed borings	6.75 to 7.25
No. 1 busheling	10.50 to 11.00
No. 2 busheling	7.75 to 8.25
No. 1 boilers, cut to sheets and rings	8.50 to 9.00
Boiler punchings	12.50 to 13.00
No. 1 cast scrap	12.25 to 12.75
Stove plate and light cast scrap	10.50 to 11.00
Railroad malleable	12.25 to 12.75
Agricultural malleable	10.75 to 11.25
Pipes and flues	9.25 to 9.75

**Wire Products.**—With a marked increase in shipments, not only of wire nails, but also barb wire and fencing, wire makers are beginning to feel the approach of a car shortage. The increased demand for fence material comes from larger retail requirements and from heavier specifications by fabricators of wire goods. An advance of \$1 a ton was made this week on wire products, and we quote as follows: Plain wire, No. 9 and coarser, base, \$1.68; wire nails, \$1.88; painted barb wire, \$1.88 to \$1.93; galvanized, \$2.18; polished staples, \$1.93; galvanized, \$2.23, all Chicago.

**Rivets and Bolts.**—Prices on bolts and screws in this territory are subject to a general advance as indi-

cated in our revised quotation. Some mills have also advanced the price on rivets an additional \$2 per ton and are quoting on the basis of 2.08c. base Chicago for structural rivets. This advance is not yet general and some business can still be placed at minimum quotations. We quote as follows: Carriage bolts up to 3/4 in. x 6 in., rolled thread, 75-10-10-2 1/2; cut thread, 75-10-7 1/2; larger sizes, 70-10-5; machine bolts up to 3/4 in. x 4 in., rolled thread, 75-10-10-7 1/2; cut thread, 75-10-10-2 1/2; larger sizes, 75 and 10; coach screws, 80-12 1/2; hot pressed nuts, square head, \$6.00 off per cwt.; hexagon, \$6.70 off per cwt. Structural rivets, 3/4 to 1 1/4 in., 1.98c. to 2.08c., base, Chicago, in carload lots; boiler rivets, 0.10c. additional.

## Philadelphia

PHILADELPHIA, PA., August 27, 1912.

The iron markets have increased in activity, with generally higher asking prices and less disposition by sellers to enter contracts. On finished material premiums continue to be paid freely, and a spread of \$5 a ton is not unusual. Eastern mills are still handicapped by the shortage of common labor. A sale of 10,000 tons of Mayari steel rails has been made for fourth quarter delivery. There is a better demand for iron bars and prices have advanced. Premiums are paid for prompt steel bars. The old material market has been more active. Sales during the week will total upward of 20,000 tons of steel scrap.

**Pig Iron.**—Increased activity characterizes the market. Stove makers, machinery builders and general foundries have bought quite freely, some endeavoring to cover for fourth and first quarter requirements. Cast iron pipe foundries still have inquiries out, but contracts close slowly as in the majority of cases sellers have advanced prices of low grade iron, some naming \$16 delivered, as a minimum. The Pennsylvania Railroad is reported to have closed against its 10,800 tons of fourth quarter iron, taking the full quantity and distributing the business among several sellers. A very fair volume of business in moderate quantities is moving in standard brands of No. 2X eastern Pennsylvania foundry, for which quotations still range from \$16 to \$16.25, delivered, although the quantity available for fourth quarter, at the inside quotation, is steadily shrinking. Several additional producers have marked prices up to \$16.25 as a minimum, and are asking an advance of 50c. a ton for first quarter. An active movement in Virginia foundry continues, round lot sales to New England and to local consumers being reported at \$14, furnace, for No. 2X. This price represents the general flat quotation for that grade, although one interest, being sold up, has advanced quotations 25c. a ton. A sale of 500 tons of No. 1 Virginia foundry for early delivery has been made at \$14.25, furnace. Virginia producers have so far shown practically no interest in inquiries for strictly first quarter business. Rolling mill forge iron has been quieter, although prices are very firmly held at \$15.75 to \$16, delivered in this district. Buying of steel making grades continues active. A leading consumer in this district, who recently purchased first quarter basic at \$16.15 and \$16.25, delivered, has bought 16,000 tons additional, for the same delivery, paying \$16.50. This melter has now practically closed for requirements during the period named. Another Eastern melter has closed for 5000 tons of fourth quarter basic at \$16.25, delivered. Another interest is understood to be still in the market for a round lot of fourth quarter basic. Makers of basic in this district are now pretty well covered for fourth quarter, and have little iron of this grade to offer, although \$16.50, delivered, is now considered the market for such delivery. A sale of 3000 tons of Bessemer iron to a consumer in this district is also noted. Low phosphorus pig has been sold in moderate lots, and in view of the condition of sellers' order books is decidedly firm at \$21.50, delivered here. Some further good business in this grade is under negotiation. The market is decidedly strong, and the tendency appears toward higher prices. The following range is quoted for standard brands delivered in buyers' yards during the remainder of the year in this district:

Eastern Pennsylvania No. 2 X foundry	\$16.00 to \$16.25
Eastern Pennsylvania No. 2 plain	13.75 to 16.00
Virginia No. 2 X foundry	16.80 to 17.00
Virginia No. 2 plain	16.55 to 16.75
Gray forge	15.75 to 16.00
Basic	21.50
Standard low phosphorus	21.50

**Iron Ore.**—New business is practically at a standstill. Importations during the week include 12,575 tons

from New Brunswick, 5049 tons from Sweden and 16,850 tons from Cuba.

**Ferroalloys.**—While there has been but a moderate demand for ferromanganese from consumers in this district, prices have advanced. Quotations are based on each individual inquiry and \$53.50, Baltimore, is the best that can be done for 80 per cent. for next year's delivery. For the remainder of this year quotations range from \$55 to \$57, seaboard, but very little is available. Makers of furnace ferrosilicon have withdrawn prices for 10 to 12 per cent. Little business is moving in 50 per cent. ferrosilicon, but one carload lot is reported sold at \$72.50, delivered here.

**Billets.**—A heavy volume of business, increasing week after week, is reported by Eastern billet makers. Some mills are practically sold up for the remainder of the year. Premiums continue to be obtained for prompt shipments. Basic open hearth rolling billets are strong at \$25.40 minimum, with premiums running up to \$3 a ton for early deliveries. A very general demand for forging billets is reported, with quotations strong at \$30 minimum, Eastern mill, for ordinary analysis steel.

**Old Material.**—Quite an active market has developed in heavy melting steel scrap. Upward of 20,000 tons has been sold during the week at prices ranging from \$14.25 to \$15, dependent on tonnage and delivery. In 1000-ton lots \$14.50 was paid, while larger tonnages brought \$15, delivered. Several Eastern steel mills are actively in the market for melting steel. While the same activity has not been shown in all grades of material an uplifting of some prices is noted. The market, on the whole, is strong, with dealers making little effort to sell at present market prices. The following range of prices about represents the market for deliveries in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate ranging from 35c. to 1.35c. per gross ton:

No. 1 heavy melting steel scrap and crops	\$14.50 to \$15.00
Old steel rails, rerolling (nominal)	16.00 to 16.50
Low phosphorus heavy melting steel scrap	17.75 to 18.25
Old steel axles	17.50 to 18.00
Old iron axles	24.00 to 25.00
Old iron rails (nominal)	16.50 to 17.00
Old car wheels	14.25 to 14.75
No. 1 railroad wrought	16.00 to 16.50
Wrought iron pipe	13.00 to 13.50
No. 1 forge fire	12.50 to 13.00
No. 2 light iron (nominal)	7.50 to 8.00
Wrought turnings	10.75 to 11.25
Cast borings	9.75 to 10.00
Machinery cast	13.75 to 14.25
Grate bars, railroad	10.50 to 11.00
Stove plate	10.50 to 11.00
Railroad malleable (nominal)	12.50 to 13.00

**Plates.**—Eastern mills continue to receive a heavy aggregate volume of new business and, while a good share is of a miscellaneous character, contracts involving upward of 1000 tons for this year's delivery are not infrequent and are usually placed at a premium of several dollars over current quotations. Specifications for all classes of plates come out freely and mills continue to operate at close to full capacity, although still short of common labor. Deliveries are hardening slightly, although small lots can sometimes be worked in for shipment in a week or so. Such deliveries, however, command premiums of \$4 to \$5 a ton. Quotations are firmly maintained at 1.55c. for sheared, and 1.60c. for universal plates, as a minimum delivered in this district.

**Structural Material.**—The demand for plain shapes continues heavy, with mills in this district operating at top capacity and continuing to fall behind in deliveries. Sizes available for early shipment are subject to sharp premiums, as high as 1.75c., Eastern mill, being paid. For ordinary delivery quotations for plain shapes are strong at 1.55c., delivered here, although 1.50c. is still named by Western interests unable to make satisfactory deliveries. New business in fabricated work has been quiet. A sale of 1000 tons of column work to a local contractor is reported. Several fair contracts are in prospect, including a new office building to be erected on South Penn Square.

**Sheets.**—The demand has been heavy and mills are further sold ahead than at any time for a long period. While Western mills continue to quote 1.65c., delivered here, for No. 10 sheets Eastern mills making smooth, loose rolled sheets easily obtain 1.75c., f.o.b. mill, for No. 10, to which premiums for prompt shipment are added. Mill activities continue at full capacity.

**Bars.**—Fancy prices continue to be paid for prompt steel bars. Specifications on contracts are heavy and few producers are in a position to make satisfactory deliveries. The demand for iron bars has increased. With deliveries delayed on steel bars consumers have substituted iron bars when possible, as a result of which the demand for the latter has been materially better and

makers have firmed up on prices, minimum quotations now ranging close to 1.32½c., mill, equal to 1.40c. to 1.45c., delivered here. Some makers name 1.42½c., delivered, as a minimum.

**Coke.**—Moderate business is moving in spot and contract furnace coke at \$2.10 to \$2.30, at oven. Foundry coke is not very active. The following range of prices, per net ton, is named for delivery in buyers' yards in this district:

Connellsville furnace coke	\$4.10 to \$4.60
Connellsville foundry coke	4.55 to 4.70
Mountain furnace coke	3.70 to 4.20
Mountain foundry coke	4.15 to 4.30

## Cleveland

CLEVELAND, OHIO, August 27, 1912.

**Iron Ore.**—There is still considerable demand for small lots. A number of sales were made during the week, the largest reported being 35,000 tons. The supply of the most desirable ore has become scarce and buyers are having trouble in getting what they want for mixtures. Ore firms in selling at present are compelled to take into consideration the condition of the lake trade. Vessel tonnage is scarce and more boats would be used in the ore trade if they could be secured. While shippers expect to be able to get all the vessel space they need indications are that boats will be kept busy until near the close of navigation and that the late ore movement will be heavy. Boats have been delayed considerably by fogs during the past month and it is largely because of these delays that the present demand for boats is greater than the supply. Prices are firm. While recent sales have been made at regular prices it is not improbable that efforts will be made to secure a slight advance. September shipments have been heavy and the month may show a new tonnage record. We quote prices as follows: Old Range Bessemer, \$3.75; Mesaba Bessemer, \$3.50; Old Range non-Bessemer, \$3.05; Mesaba non-Bessemer, \$2.85.

**Pig Iron.**—The market is stiffening up all round. A number of sellers have advanced prices 25c. to 50c. a ton. Stocks are low both in the Valley and at other points in the central territory and some sellers are now holding for the same price for the remainder of the year as they are asking for the first half. Local furnaces have advanced their minimum price to \$14.50 at furnace for No. 2 foundry for the remainder of the year and are asking \$14.75 to \$15 at furnace for the first quarter and first half. Valley quotations on foundry iron have been advanced to \$14.25 to \$14.50. The sale of some foundry iron is reported at \$14 Valley, in the past few days, but it is believed that this price has now entirely disappeared. One Valley interest has advanced its price to \$15 for the first half delivery. Foundry iron is quoted at \$14.50, furnace, at Toledo, and \$15.25, furnace, at Detroit, for delivery into next year. There is considerable inquiry for small lots but the advance in price has caused somewhat of a lull in buying. There is considerable inquiry for basic, most of which is from brokers. On an inquiry for 15,000 tons of basic for the last quarter a local interest has quoted \$14.50, Valley furnace. B furnace of the Toledo Furnace Company, which was out of blast for six weeks for relining, was blown in August 22 on foundry iron. For prompt shipment and for the remainder of the year we quote, delivered Cleveland, as follows:

Bessemer	\$15.40 to \$15.65
Basic	14.75
Northern No. 2 foundry	14.65 to 14.75
Southern No. 2 foundry	16.35
Gray forge	13.50 to 13.75
Jackson County silvery, 8 per cent. silicon	18.05

**Coke.**—The market is firm but quiet. Several producers of foundry grades have advanced prices 15c. to \$2.65 a ton. We quote Standard Connellsville foundry coke at \$2.25 to \$2.35 per net ton at oven for prompt shipment and contract. Standard 72-hr. foundry coke is held at \$2.50 to \$2.75 for prompt shipment and contract.

**Finished Iron and Steel.**—There is considerable inquiry for small lots from consumers who either need additional material or are unable to secure shipment as desired from mills with which they have contracts. Specifications on contracts continue heavy and the situation as regards deliveries appears unchanged. Many consumers have recently allowed mills to change bar specifications from open hearth to Bessemer steel in view of the fact that better deliveries can be secured on the latter. A local mill that has a limited tonnage of steel bars for early shipment is making sales for prompt delivery at 1.70c., Pittsburgh. A local buyer has se-



cured protection for 3000 tons of steel for the first half at prices not to exceed 1.35c., Pittsburgh, for steel bars and 1.45c. for plates and shapes. Another mill is quoting steel bars at 1.35c. for the first quarter and 1.40c. for the second quarter. The demand for hard steel bars for reinforcing is heavy and sales are being made at a minimum quotation of 1.30c., Pittsburgh. The demand for structural material is heavy and fabricators are well filled with work. Bids received for the Superior Avenue Bridge, Cleveland, requiring 3750 tons of steel were rejected August 24 and new bids will be received. Only two bids were received. One was from the King Bridge Company, Cleveland, which bid \$157 a ton erected and the other from the Pennsylvania Steel Company, Steelton, Pa., which bid 8c. a lb. erected. The specifications call for 1500 tons of nickel steel. They may be revised so as to permit the use of open hearth steel for the entire work. The American Bridge Company has taken 300 tons for a new plant for the Toledo Glass Company, Toledo, Ohio. There is an inquiry out for 1200 tons for a new forge shop to be built in Cleveland by the Upson Nut Company. Sheets are in good demand and the market is firm at 2.05c. for No. 28 black and 3.15c. for No. 28 galvanized. Some contracts for the remainder of the year are being placed at these prices. The demand for rivets is heavy and the prices are firm at the recent advance to 1.80c., Pittsburgh, for structural and 1.90c. for boiler. The demand for iron bars continues active and the market is very firm. We quote iron bars at 1.40c., Cleveland, as a minimum price. The demand for material out of stock is heavy and jobbers are having trouble in keeping up with deliveries. We note the advance of \$1 a ton on wire and nails, the base price for nails now being 1.70c.

**Old Material.**—Inquiries are more plentiful for nearly all grades of scrap, but these, for the most part, are for future delivery. Dealers could doubtless sell heavy tonnages of scrap at present prices for future delivery, but they do not want to sell for extended delivery and will not do so except at higher prices than are now prevailing. Local mills are still congested with scrap and shipments are being held back. The general tone of the market is very firm in spite of the fact that only a limited tonnage has been sold recently. Dealers' prices, f.o.b. Cleveland, are as follows:

## Per Gross Ton.

Old steel rails, rerolling.....	\$14.00 to \$14.50
Old iron rails .....	14.00 to 14.50
Steel car axles .....	18.50 to 19.00
Heavy melting steel .....	13.00 to 13.50
Old car wheels .....	13.00 to 13.50
Relaying rails, 50 lb. and over .....	22.50 to 23.50
Agricultural malleable .....	10.50 to 11.00
Railroad malleable .....	13.00 to 13.25
Light bundled sheet scrap .....	10.00 to 10.50

## Per Net Ton.

Iron car axles .....	\$18.50 to \$19.00
Cast borings .....	7.25 to 7.50
Iron and steel turnings and drillings.....	8.00 to 8.25
Steel axle turnings .....	8.50 to 8.75
No. 1 busheling .....	11.00 to 11.25
No. 1 railroad wrought .....	12.50 to 13.00
No. 1 cast .....	11.50 to 12.00
Stove plate .....	9.50 to 10.00
Bundled tin scrap .....	11.00 to 11.50

## Boston

BOSTON, MASS., August 27, 1912.

**Old Material.**—Better demand is experienced for several grades of scrap iron and steel and dealers have advanced prices 25c. to 50c. per ton. The volume of business is increasing, both as to purchases and sales. The quotations given below are of prices offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel.....	\$11.50 to \$11.75
Low phosphorus steel .....	12.50 to 13.00
Old steel axles .....	14.00 to 14.50
Old iron axles .....	20.00 to 21.00
Mixed shafting .....	13.50 to 14.00
No. 1 wrought and soft steel .....	10.50 to 11.00
Skeleton (bundled) .....	10.00 to 10.50
Wrought iron pipe .....	10.00 to 10.25
Cotton ties (bundled) .....	9.50 to 10.00
No. 2 light .....	4.50 to 5.00
Wrought turnings .....	7.50 to 8.00
Cast borings .....	7.00 to 7.25
Machinery, cast .....	12.50 to 13.00
Malleable .....	9.50 to 10.00
Grate bars .....	7.75 to 8.00
Stove plate .....	8.50 to 9.00
Cast-iron car wheels .....	12.50 to 13.00

## Cincinnati

CINCINNATI, OHIO, August 28, 1912.—(By Telegraph.)

**Pig Iron.**—A conservative estimate of the amount of iron booked by Cincinnati houses last week and for shipment to this territory alone is placed above 100,000 tons. The larger part of this was taken by Northern producers and divided among about 12 Central Western smelters. There was some 20,000 tons of malleable ordered for shipment during the remainder of this year and the first half of 1913. Prices in both Southern and Northern producing districts have hardened, and \$12, Birmingham basis, is minimum for spot No. 2 foundry. While there is yet some Northern iron obtainable for this year's shipment as low as \$14, Iron-ton, indications are that this price will soon disappear and a minimum of \$14.50 will be established, which is now the quotable figure for first quarter shipment. Southern prices for next year are still in somewhat of a chaotic condition. More than one producer has given instructions to hold out for \$13 Birmingham for the first quarter, but considerable contracting at \$12.50 is being done. A Michigan manufacturer recently purchased 1000 tons of Lake Superior charcoal for delivery in the next six months, and the high silicon irons have also been in better demand. Manufacturers of railroad equipment have been very active in covering for their future requirements of malleable and foundry iron, indicating that the railroads are pushing them for delivery on cars recently ordered. Without exception, business men in this territory predict the worst car shortage for the coming winter season that has ever been experienced, which probably accounts for the recent heavy purchasing of pig iron. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Iron-ton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry and 1 soft.....	\$15.50 to \$16.00
Southern coke, No. 2 foundry and 2 soft.....	15.25 to 15.75
Southern coke, No. 3 foundry .....	14.75 to 15.00
Southern coke, No. 4 foundry .....	14.50 to 14.75
Southern gray forge .....	14.50 to 14.75
Ohio silvery, 8 per cent. silicon.....	17.70 to 18.20
Southern Ohio coke, No. 1.....	15.45 to 15.95
Southern Ohio coke, No. 2.....	15.20 to 15.70
Southern Ohio coke, No. 3.....	14.70 to 15.20
Southern Ohio malleable Bessemer .....	15.20
Basic, Northern .....	14.70
Standard Southern car wheel .....	25.75 to 26.00
Lake Superior charcoal .....	16.75 to 17.25

## (By Mail)

**Coke.**—Furnace coke is much more active. A contract for about 60,000 tons of Connellsville 48-hr. was made with a consumer in the Chicago district, with deliveries extending through the next 12 months, at a price slightly above \$2.25 per net ton, at oven. It is also understood that a furnace interest in the Hanging Rock district contracted for a like quantity of Wise county coke, paying close to \$2.40 a ton. Other contracts are pending for furnace coke, but foundry grades are moving slowly. We quote Connellsville and Wise county furnace coke around \$2.25 to \$2.45 per net ton, at oven, and Pocahontas between \$2.15 to \$2.25 per net ton, at oven. Foundry coke is unchanged at \$2.50 for prompt shipment and around \$2.60 to \$2.75 on contract, in both the Connellsville and Wise county fields. Pocahontas foundry coke is obtainable all the way from \$2.40 to \$2.75. Producers in all three fields are complaining of a shortage in labor, and in many instances the threatened car shortage is also making some trouble, and it is predicted that foundrymen will soon appreciate the situation and create a brisk demand for 72-hr. coke to be stocked for use during the coming fall and winter season. The demand for domestic coke has already shown considerable improvement.

**Finished Material.**—A few mill agencies report a cessation in requests for shipments on structural material and the steel bar contracts. While local stocks are running low the let up in sending in specifications on contracts appears to be an inability on the part of some customers to obtain funds for carrying as large an amount of finished material as their business judgment dictates will be needed to fill orders a little later on. There is already trouble in filling orders for some prompt shipment material, and as stocks are being rapidly depleted this is apt to become acute as the fall season advances. Wire nails and tin plate are in better demand and both black and galvanized sheets are hard to obtain for nearby shipment. The local warehouse price on steel bars is around 1.90c. to 1.95c. and on structural material 2c. to 2.05c.

**Old Material.**—The rolling mills are slow in making contracts, as quite a number of them are working on contracts for finished material that was taken on at the lower prices prevailing some time ago. The demand

from this source is undoubtedly bound to come out soon and scrap iron dealers are not now disposed to make any concessions. The minimum figures given below represent what dealers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' selling prices, f.o.b. at yards:

	Per Gross Ton.
Bundled sheet scrap .....	\$9.25 to \$9.75
Old iron rails .....	13.00 to 13.50
Relaying rails, 50 lb. and up .....	20.25 to 21.25
Re-rolling steel rails .....	11.25 to 11.75
Melting steel rails .....	10.25 to 10.75
Old car wheels .....	12.50 to 13.00

	Per Net Ton.
No. 1 railroad wrought .....	\$10.75 to \$11.25
Cast borings .....	6.50 to 7.00
Steel turnings .....	7.25 to 7.75
No. 1 cast scrap .....	11.00 to 11.50
Burnt scrap .....	7.75 to 8.25
Old iron axles .....	17.25 to 17.75
Locomotive tires (smooth inside) .....	12.00 to 12.50
Pipes and flues .....	7.25 to 7.75
Malleable scrap .....	8.75 to 9.25
Railroad tank and sheet scrap .....	6.75 to 7.25

## Birmingham

BIRMINGHAM, ALA., August 26, 1912.

**Pig Iron.**—It is estimated that total sales of Alabama pig iron in the first three and a half weeks of August amount to 150,000 tons, about a third of which is for delivery in the first quarter of 1913 and brought prices based on \$12.50 for No. 2 foundry. The sale of 60,000 tons by the leading interest for delivery into the first quarter of 1913 was followed by sales by another producer of 17,000 tons for the same delivery, also at \$12.50 for No. 2. The latter company then put the 1913 price up to \$13 and turned down offers of \$12.50. The leading interest is also reported as quoting \$13 for 1913. The exclusive foundry iron producer with most stocks on hand is reported as selling 40,000 tons the first three weeks of August, and has practically advanced to \$12.50 for the rest of the year and \$13 for 1913, although regular customers might still secure concessions for prompt iron. A leading broker reports the sale of 1500 tons of charcoal iron at \$22.50. Only two charcoal stacks in Alabama are in operation. Total charcoal iron sales recently amount to 3000 tons. A small tonnage of No. 4 spot was sold at \$11.25. A large interest reports the sale of lots of No. 4 at \$11.75 and of gray forge at \$11.50. This maker is on a flat basis of \$13 from now on and that basis as applied to 1913 business is subject to prior orders and withdrawal at any time for a higher level. It may be said that two of the large interests are sold through the rest of the year and well into the first quarter. Another large concern, after selling at \$12.50, retired from the market, and will probably not consider any more offers under \$13. The demands of the home steel makers, rolling mills, pipe concerns and foundries continue heavy, and the suggestion of a car shortage is adding to the price strength of the iron market. Alabama iron is scarce and becoming scarcer. Higher levels might be expected with some degree of regularity at intervals. The minimum for Birmingham iron, f.o.b. cars Birmingham, for 1913 delivery, is \$12.50 to \$13, and the minimum for spot and fourth quarter deliveries is as follows:

No. 1 foundry and No. 1 soft .....	\$12.50 to \$13.00
No. 2 foundry and No. 2 soft .....	12.00 to 12.50
No. 3 foundry .....	11.50 to 11.75
No. 4 foundry .....	11.00 to 11.50
Gray forge .....	11.00 to 11.25
Basic .....	11.50 to 12.00
Charcoal iron .....	22.50 to 23.00

**Old Material.**—Light cast and machinery scrap continue in good demand owing to the scarcity of low-grade pig iron. The old rolling mill of the Republic Iron & Steel Company at Gate City has been dismantled and scrapped. Accumulations on yards are heavy, but the dealers are firm in adhering to the following quotations per gross ton:

Wrought-iron car axles .....	\$15.00 to \$16.00
Old steel axles .....	13.50 to 14.50
Old iron rails .....	13.50
No. 1 railroad wrought .....	11.00 to 11.50
No. 2 railroad wrought .....	10.00
No. 1 country wrought .....	8.50 to 9.00
No. 2 country wrought .....	8.00 to 8.50
No. 1 machinery .....	9.00 to 9.50
No. 1 steel .....	10.00 to 10.50
Tram car wheels .....	10.00 to 10.50
Standard car wheels .....	10.50 to 11.00
Light cast and stove plate .....	7.00 to 7.50

**Cast Iron Pipe.**—Pipe manufacturers are advancing quotations in response to the rise in pig iron. Latest quotations f.o.b. Birmingham yards, per net ton, are: 4-in., \$25; 6-in. and up, \$23, with \$1 more for gas pipe. Orders are coming in at a rate to insure continuous

operations for some time. Shipments are heavy and accumulations are small. The new plant at Holt is in operation.

**Coal and Coke.**—The coal market has shown little increase in activity, although specifications and inquiries for early fall delivery are satisfactory. Alabama foundry coke is firm and steady at \$3.25 to \$3.75 per net ton at oven. Some Virginia coke has been offered, but none has been recently shipped into Alabama.

## St. Louis

St. LOUIS, Mo., August 26, 1912.

The general situation in iron and steel at this point continues to maintain the tone which has characterized it in recent weeks. The buying continues, there is little or no questioning of the prices and the disposition of buyers is to await the deliveries with such complacency as they can assume. The aggregate of business continues very heavy, prices are firm and the collections good.

**Pig Iron.**—While a week ago pig iron was quotable on a basis of \$12 for delivery the remainder of the year for No. 2 Southern, Birmingham basis, and while the same quotation is made by some agents still, a majority of them frankly confess that not only have they no \$12 iron but that they would be buyers if such could be found. Those who are quoting \$12 do so with the proviso of submission to the furnace for acceptance. The aggregate of sales for the week has been considerably in excess of 15,000 tons and the feature of the period has been the activity of the stove plants as buyers. The sales of the week include one of 2000 tons to one concern and about 3000 tons to another while several sales of smaller lots were made to similar interests. Inquiries out include one of about 4000 tons divided between Northern and Southern iron and several for smaller quantities. Most of the Southern furnaces are generally considered here as really on a basis of not less than \$12.50 for the rest of the year and a minimum of \$13 for the first quarter of next. There have been some sales of Northern iron in the week, quite large in the aggregate, but none of individual size.

**Coke.**—The coke market has stiffened, but is not quotably higher, although there is considerably less disposition to sell at the lower figure of the spread last reported. This market is chiefly a consumer of foundry coke and the range is \$2.50 to \$2.75 for best 72-hour, at both Connellsville and Virginia ovens. Furnace coke is held at \$2.25. The specifications on contracts continue to steadily increase, with the result that a large tonnage is moving. By-product coke is doing nothing at present.

**Old Material.**—The scrap market still reflects the buoyancy of the new material situation and prices score further advances. The market is very strong, and still further advances are looked for in the near future. Stocks are light in dealers' yards and shipments are being made even outside of the natural St. Louis territory at a profit. The only list out for the week was one of about 1400 tons, closing Wednesday, from the Rock Island. We quote dealers' prices, f.o.b. St. Louis, as follows:

	Per Gross Ton.
Old iron rails .....	\$15.00 to \$15.50
Old steel rails, re-rolling .....	12.75 to 13.25
Old steel rails, less than 3 ft. ....	11.75 to 12.25
Relaying rails, standard section, subject to inspection .....	23.00 to 23.50
Old car wheels .....	14.50 to 15.00
Heavy melting steel scrap .....	11.50 to 12.00
Frogs, switches and guards cut apart .....	11.50 to 12.00

	Per Net Ton.
Iron fish plates .....	\$13.00 to \$13.50
Iron car axles .....	19.00 to 19.50
Steel car axles .....	16.50 to 17.00
No. 1 railroad wrought .....	11.50 to 12.00
No. 2 railroad wrought .....	11.00 to 11.50
Railway springs .....	10.50 to 11.00
Locomotive tires smooth .....	13.00 to 13.50
No. 1 dealers' forge .....	9.00 to 9.50
Mixed borings .....	6.75 to 7.25
No. 1 busheling .....	9.50 to 10.00
No. 1 boilers, cut to sheets and rings .....	8.00 to 8.50
No. 1 cast scrap .....	11.50 to 12.00
Stove plate and light cast scrap .....	9.00 to 9.50
Railroad malleable .....	10.00 to 10.50
Agricultural malleable .....	8.50 to 9.00
Pipes and flues .....	8.00 to 8.50
Railroad sheet and tank scrap .....	8.00 to 8.50
Railroad grate bars .....	9.00 to 9.50
Machine shop turnings .....	7.50 to 8.00

**Finished Iron and Steel.**—There is a continuance of the generally heavy movement and ordering. In standard steel rails the Missouri Pacific bought 10,000 tons, conditioned on delivery during the current year. Otherwise there were no purchases and no inquiries of



consequence. In light rails there was considerable activity on the part of the coal interests, which are becoming more active, while the lumber trade is buying fairly well, with strong indications of considerably heavier purchases later in the season. Track fastenings continue in very good demand with the quotation for spikes \$1.85 St. Louis and bolts \$2.25 same delivery. In structural material the orders continue heavy without any individual new business standing out above the rest. Specifications on contracts are running well above the earlier estimated requirements, showing that the consumers are in urgent need of the material. In bars there is pressing demand and specifications are likewise above calculated requirements. In plates and shapes generally the buyers have settled down to taking what they can get, both as to prices and deliveries. Warehouses are doing a big business on such as they have in stock. The wagon and agricultural interests generally are actively in the market.

## Buffalo

BUFFALO, N. Y., August 28, 1912.

**Pig Iron.**—The market is still gaining strength and large inquiry is coming before producers principally for 1913 delivery. The week's orders did not total as heavy a tonnage as for the preceding week, but were nearly 50,000 tons of all grades. The advance in price, coupled with the limited amount of iron available for delivery in the fourth quarter, checked the volume of orders to some extent, but the aggregate of inquiry from melters interested in early delivery is more than furnaces can take care of, very little iron for this year's delivery being for sale and most furnaces having reached a point where they are declining further business for 1912. There is no available stock left on furnace yards and it is probable a large tonnage could be sold at a premium. Many producers are convinced that further advances are imminent owing to the large demand in sight and are not anxious to quote beyond the first quarter of 1913. Such deliveries are commanding top prices, some furnaces quoting \$15.50 as a minimum for the higher grades. The Tonawanda Iron & Steel Company expects to blow in both its stacks about October 1, with well filled order books. This company's furnaces have been out of blast about a year. The relining of No. 2 furnace of the Rogers-Brown Iron Company will be completed and the furnace will go in blast this week, when the No. 1 furnace will go out for relining. So far this season pig iron shipments via the Erie Canal have beaten the record for any previous season notwithstanding the fact that the canal capacity is curtailed by construction work under way for its enlargement. While schedules have not been advanced this week, the situation is much stronger and the tendency of the market is upward. We quote as follows for remainder of year and first quarter of 1913 delivery, f.o.b. Buffalo:

No. 1 foundry .....	\$15.25 to \$15.50
No. 2 X foundry .....	15.00 to 15.25
No. 2 plain .....	15.00
No. 3 foundry .....	14.75 to 15.00
Gray forge .....	14.75
Malleable .....	15.25 to 15.50
Basic .....	15.00 to 15.50
Charcoal, according to brand and analysis ..	16.50 to 18.00

**Finished Iron and Steel.**—Business for the week has been of large volume in all lines, although not so heavy as in the preceding week. New orders consisted principally of small lots, but in large number, no very large tonnages being taken. Many mills and agencies are now practically out of the market to the end of the year and inclined to clean up deliveries required on present contracts rather than to take on much new business for 1913 delivery. While 1.30c., Pittsburgh base, is the ruling price for desirable orders for bar material by most agencies, 1.35c. to 1.40c. is asked for small miscellaneous lots. One or two interests, however, have this week announced an advance to 1.35c. for all business in steel bars. Plates and shapes are still held at 1.40c. Pittsburgh. Warehouse business has been large, prices ruling at 1.95c. for bars and 2.05c. for structural and plates, f.o.b. Buffalo, with 5c. additional for territory points outside the city. In black and galvanized sheets the demand is very active and prices are strong, premiums being offered for immediate shipment. Wire products have advanced \$1 per ton, effective August 24. In fabricated structural lines a large amount of work continues to come out for figuring and prices are very firm. Some fabricators are being held back on work by inability to get required deliveries on material. Plans are being prepared by Esenwein & Johnson, architects, for an addition to the Buckingham family hotel, Buffalo, taking about 200

tons. The Buffalo Structural Steel Company has received contract for 100 tons required for an addition to the Niagara street transformer station of the Cataract Power & Conduit Company, Buffalo, and the George Kellogg Structural Company, Buffalo, has taken contracts for the city hall and jail, Lackawanna City, N. Y., 200 tons, and for club house to be built by the Order of the Eagles, Jamestown, N. Y., also for warehouse and cold storage building for Riley & Wands, Jamestown, each requiring about 150 tons. The Braas Bros. Company, Niagara Falls, is low bidder on the general contract for factory addition and boiler house for the Shredded Wheat Company in that city, requiring a little over 1000 tons.

**Old Material.**—Local mills are taking on scrap material in increasing volume and there is also a large demand from outside markets. The only advance in prices noted over last week's schedule is for railroad malleable which went up from 25c. to 50c. per ton, but prices are very strong in all lines. We quote as follows per gross ton, f.o.b. Buffalo:

Heavy melting steel .....	\$13.00 to \$13.50
Low phosphorus steel .....	15.75 to 16.50
No. 1 railroad wrought .....	13.50 to 14.25
No. 1 railroad and machinery cast scrap ..	13.25 to 14.00
Old steel axles .....	15.25 to 16.25
Old iron axles .....	22.00 to 22.50
Old car wheels .....	13.25 to 13.75
Railroad malleable .....	12.00 to 12.50
Boiler plate, sheared .....	13.75 to 14.25
Locomotive grate bars .....	11.00 to 11.25
Drought pipe .....	9.50 to 10.00
Tank iron .....	10.00 to 10.25
Wrought iron and soft steel trimmings ..	8.25 to 8.75
Clean cast borings .....	7.50 to 8.00

## British Market Continues Strong

Numerous Price Advances and Heavy Buying Expected—  
Crop Situation Very Serious

(By Cable.)

MIDDLESBROUGH, ENGLAND, August 28, 1912.

Cleveland pig iron continues strong and active and heavy buying is expected by consumers. Stocks in Connal's stores have increased, being 288,009 tons, against 287,114 tons last week. Prospects are considered very good and much higher prices are talked of. The German Verband has raised prices of semi-finished material, having sold freely on the old basis, and German sheet bars, f.o.b. Antwerp, are now 107s. 6d. We quote as follows:

Cleveland pig iron warrants (closing Tuesday), 62s. 9d. against 61s. 6d. one week ago.

No. 3 Cleveland pig iron, maker's price, f.o.b. Middlesbrough, 63s. 3d. against 62s. one week ago. Cumberland hematite is 75s.

Steel sheet bars (Welsh) delivered at works in Swansea Valley, £6 2s. 6d.

German 2-in. billets, f.o.b. Antwerp, 102s. 6d. against 100s. one week ago.

German basic steel bars, f.o.b. Antwerp, £5 18s. to £5 19s., advance of 1s. 6d.

Steel bars, export, f.o.b. Clyde, £7 15s to £7 17s. 6d.

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £7 2s. 6d. against £7 one week ago.

Steel ship plates, Scotch, delivered local yard, £8 2s. 6d.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £9 5s., same as one week ago.

Steel rails, export, f.o.b. works port, £6 7s. 6d. to £6 10s.

Tin plates, cokes, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 14s. 7½d., October-December.

## Continued Activity in Germany

BERLIN, August 9, 1912.

The news from the iron trade has been uninterruptedly good for a week. Great activity is reported in all departments of the trade, and the price movement continues upward, both in Germany and in neighboring countries. The Pig Iron Syndicate has added 4 marks to the price of Luxemburg foundry iron on supplementary sales for the remainder of this year. Sales for 1913 delivery have not yet been declared open, which apparently indicates that another advance may be looked for. From the hardware trade an upward movement in screw prices is mentioned.

From Belgium a stronger tendency is reported, after the weakness mentioned in July. Export prices are again rising. All forms of semi-finished material have just been raised 2 shillings, and thin plates 1 shilling. Only bars are mentioned as still being of

uncertain tendency, although some mills raised their prices. From French Lorraine an advance on beams and bands of 4 marks is telegraphed.

The strength of the general situation in Germany is strikingly emphasized by the fact that exporters who sold steel short abroad about two months ago, under the belief that a period of lower prices was about to begin, are now covering their orders. The firmness of foreign markets has favorably affected the tone of the German markets, the American reports, as gathered by *The Iron Age*, coming in for close attention.

#### Entire Merchant Pig Iron Output Syndicated

The advance in Luxemburg pig already mentioned was directly due to the continued rise of iron prices in England. This advance is also significant in another way; it is regarded as evidence that the Luxemburg-Lorraine group of furnaces has come to an understanding with the Essen Pig Iron Syndicate to continue in it after the end of this year, when the arrangement originally made with it expires. There has been a steady and strong demand for Luxemburg iron for several months and this gave the syndicate occasion to mark up prices. The advance, however, only affects the small amounts still available for 1912 delivery. The syndicate, by the way, has just reached an arrangement with four small independent furnaces in the Siegerland district, producing a total of above 30,000 tons yearly, for marketing their product. Henceforth, therefore, the entire pig iron product of the country will be under the control of the syndicate, except what is consumed by the works themselves in their own mills.

The production of pig iron in July established a new record with 1,468,011 tons. This was 4400 tons above the production of May, 1912, which had been hitherto the record month. August is expected to show a still bigger output. Yet the scarcity of pig iron has become more serious for consumers. Foundries and other buyers are calling urgently for shipments on contracts.

The Siegerland mines continue to ship considerably larger quantities of ore than their current production. Furnaces are calling urgently for ore and there is no prospect of a reduction in the demand. It is announced that the great Gelsenkirchen Company has taken from a Dutch company an option on very rich ore lands in southeastern Sumatra.

#### Rolled Products Active

Semi-finished steel remains scarce. Since the Union opened sales for the final quarter of the year consumers have been sending in their orders and are taking increased quantities. Steel rails have grown somewhat more active. Structural material remains in a satisfactory position. In bars some selling for 1913 delivery is reported at prices ranging between 118 and 120 marks. Hurry orders bring out prices as high as 125 marks, especially where special qualities are concerned. The situation of the heavy plate trade has grown better. Some orders for next year's delivery have been booked recently and scarcely any business can now be done at less than 135 marks for ordinary plates. The position of wire has considerably improved, although prices are still unsatisfactory and wire rods are growing scarcer. The Rod Syndicate several days ago opened business for the fourth quarter at unchanged prices.

The exports of heavy steel products in July were smaller than last year. The following figures have just been issued: Semi-finished material, 60,316 tons, against 80,138 tons; beams, 44,410 tons, against 67,066 tons; steel rails and ties, 51,068 tons, against 68,480 tons. The imports of iron ores reached 1,185,000 tons, as compared with 1,312,000 tons for July, 1911.

The July shipments of the Steel Works Union amounted to 539,000 tons in semi-finished material, structural shapes and rails. This compares with 461,600 tons for July, 1911, and 612,900 tons for June, 1912.

German iron companies continue to announce increased dividends for the business year that closed with June 30. The Rombacher Hütte has just declared a dividend of 10 per cent. against 9 last year, and the Hasper Eisen und Stahlwerk 12 per cent. against 10.

#### The Russian Iron Trade

The condition of the Russian iron trade is reflected in a large increase in the bookings of the Prodamenta, which is the name for the general combination of the Russian steel works. Its new orders in the first half of this year amounted to 1,249,000 tons, which compares with 1,011,000 tons for the first half of 1911 and 933,000 tons in 1910. Orders for steel rails showed a heavy gain, having amounted to 374,600 tons, against only 167,000 tons last year. Orders for bars did not come up to the record figures of last year, but structural shapes showed a great increase. It is added that the mills are

not in a position to meet the demands of the market and some of them are even refusing orders for 1913 delivery.

#### Additional Trade News

BERLIN, August 16.—The favorable position of the iron trade has been fully maintained since last week's report. In no direction has any break in the advancing line of prosperity been reported. The price movement is still upward, where changes occur at all. This week an advance in bar steel for export is to be mentioned as the most important news of this sort. It was due to an advance of export prices in Belgium of 2 to 3 marks, which has given a strong impulse to export buying in the German trade. On the other hand, home consumers of bars continue in a waiting attitude. An important Lorraine company several days ago gave notice of an advance of basic bars by 5 marks. Following the example of the western makers of cold-rolled bands, the Silesian mills have also marked up their prices by 5 marks. It is also reported that the national organization of foundries contemplates an early advance on castings.

#### New York

NEW YORK, August 28, 1912.

**Pig Iron.**—More pig iron is under inquiry in this market than was the case one week ago. An important interest with plants in different parts of the country has been in the market for 10,000 tons, and has already closed for 3000 tons for delivery this year. The greater part of the remainder is for delivery in 1913. Two or three sales of 1000 tons each are reported in New Jersey and other lots for delivery to New Jersey foundries are pending. In nearly all these cases the delivery wanted was for the first quarter of 1913. A considerable sale of basic was made to a New Jersey interest. Eastern Pennsylvania furnaces are now asking \$16.50 delivered for basic for the first quarter of next year, and sales have been made at this figure. In New England several inquiries for foundry iron have come up, one for 1200 tons for delivery in the first half of next year. New England sales are reported of a number of lots ranging from 200 to 500 tons. Evidently there is still quite a little iron to be bought for this year, but the chief interest of foundries just now is in forward deliveries, indicating that contracts for castings are running several months into the new year, also that manufacturers whose foundries make castings exclusively entering into their own product want to know on what basis the latter can be sold for delivery next year. Considerable charcoal iron has been sold recently and consumption of such iron is apparently on the increase, as furnace stocks in Michigan have been reduced and additional furnace capacity is being started up. The leading Virginia interest which advanced its price last week to \$14 for No. 2 X iron for this year's delivery is now selling on that basis into next year. Higher prices have been obtained, however, for Virginia iron, a sale of 2000 tons of No. 2 X being reported at \$14.50 at furnace. Eastern Pennsylvania furnaces have made sales of No. 2 at \$15.50 at furnace for fourth quarter, and early next year. Buffalo furnaces have well sold up their make for this year and their sales for 1913 are at advancing prices. We quote as follows for Northern iron at tidewater: No. 1 foundry \$16.50 to \$16.75; No. 2 X \$16 to \$16.50; No. 2 plain \$15.75 to \$16. Southern iron is quoted at \$16.75 to \$17 for No. 1 foundry and \$16.25 to \$16.75 for No. 2.

**Structural Material.**—It is probable that the structural material required for the elevated railroads and subways in Greater New York will amount to 750,000 tons. The Brooklyn Rapid Transit's needs may total 140,000 tons; those of the Interborough system may bring the figure to 250,000 tons and the remainder will be taken for the subways to be constructed under municipal supervision. While the work will be spread over four or more years, the volume of steel required serves to emphasize the capacity of the local market for absorbing structural shapes. The steel requirements of the new Equitable building, for example, for which the Thompson-Starrett Company is the general contractor, are variously estimated between 30,000 and 40,000 tons. The feature of the immediate present, however, is the wish for a cessation in demand, so far as the mills are concerned. Fabricators generally appear to have three months' work booked but are experiencing inconvenience in belated receipt of material. The result is that prices are firm, at least for the plain material, and many regard a further early advance as justifiable. It is held



that some requests subordinate the question of price but others would then be recalled, awaiting a later reduction in price. Assuming that consumption would be checked somewhat by the price increase, it is claimed that the natural laws of supply and demand would settle the basis of the postponed sales. The present crowded condition of the mills is in part the result of a smaller percentage of output than they were considered capable of producing, in part the result of buyers underestimating their needs and in part the result of other buyers fearing they will have still greater demands made on them. At least two general contracts were lately closed for buildings taking a large tonnage of steel without an option on the steel, and in both cases it will probably have to be taken at \$6 to \$8 a ton above what it was expected it would cost. Relatively small lots appear still to be selling ostensibly out of stock at high price levels, one case of 80 tons being obtained quickly in this way for 1.75c., Pittsburgh basis. New inquiry in fair size building and bridge work is lacking, but this is expected at this time and has not detracted from the strong optimistic feeling toward the promise of the remainder of the year. Of recent contract awards may be mentioned 1700 tons for the Boston City Hall annex to the American Bridge Company; 800 tons for bridge work for the Baltimore & Ohio to the Pennsylvania Steel Company; 700 tons for three bridges for the Baltimore & Ohio to the Mt. Vernon Bridge Company; 950 tons for 2 bridges for the Barge Canal to the Owego Bridge Company; 300 tons for the Chalmers Knitting Company, Amsterdam, N. Y., to the Bethlehem Steel Company, and 1000 tons for the Snellenburg warehouse, Philadelphia, to the McClintic-Marshall Construction Company. Five sections of the Lexington avenue subway are now advertised involving all told about 20,000 tons. No quotations under 1.40c., Pittsburgh, were learned of and plain structural material is believed to be minimum at 1.56c., New York, and 2.05c. from store.

**Steel Plates.**—The local market shows if anything a diminution in demand but it is so strong that sales have been made above the acknowledged minimum. There is a lull in car buying but the Buffalo, Rochester & Pittsburgh has placed 1000 all-steel cars with the Cambria Steel Company, and the New Haven 1000 cars with the Laconia Car Company. The Buffalo, Rochester & Pittsburgh inquiry for 500 gondolas, 500 box, 100 automobile and 100 refrigerator cars is still active, and the Lehigh & New England is considering 300 to 500 cars. Sheared plates are strong at 1.56c., New York, and universal plates at 1.61c.

**Iron and Steel Bars.**—Large buyers regard the market for steel bars as 1.30c., Pittsburgh, sellers place it at 1.35c. and some sales have been at prices considerably higher. Some 1500 tons of material for car building purposes it is claimed were placed at the 1.30c. basis, but 500 tons additional was refused by another seller, offered at the same figure. Demand for bar iron exceeds production, and one large interest fixed its price the latter part of last week at 1.35c. at mill. Notwithstanding this, several carloads of what is claimed to be refined iron were reported sold at 1.25c., mill. The quotations are: Steel bars, 1.46c. to 1.51c., New York, and from store 1.90c.; iron bars, 1.40c. to 1.45c., New York, and from store 1.80c.

**Old Material.**—The market is stronger, with a general demand from consumers of heavy melting steel scrap and rolling mill stock. Foundries are doing very little in the old material market, holders of cast scrap finding it difficult to secure buyers even for small lots. Dealers' quotations, per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting.....	\$12.00 to \$12.50
Heavy melting steel scrap.....	12.00 to 12.50
Relaying rails .....	21.50 to 22.00
Rerolling rails .....	14.00 to 14.50
Iron car axles .....	21.00 to 22.00
Old steel car axles.....	15.50 to 15.75
No. 1 railroad wrought .....	13.75 to 14.25
Wrought iron track scrap.....	13.00 to 13.50
No. 1 yard wrought, long.....	12.50 to 13.00
No. 1 yard wrought, short.....	11.75 to 12.25
Light iron .....	5.25 to 5.50
Cast borings .....	7.25 to 7.50
Wrought turnings .....	8.75 to 9.00
Wrought pipe .....	11.50 to 12.00
Old car wheels .....	13.00 to 13.50
No. 1 heavy cast, broken up.....	11.50 to 12.00
Stove plate .....	8.75 to 9.00
Locomotive grate bars.....	9.00 to 9.25
Malleable cast .....	10.00 to 10.50

**Cast Iron Pipe.**—Few public lettings are announced. The most important of these is at Acton, Mass., September 2, calling for 360 tons. Private buying continues to run in about the same volume as for some time and prices are stiffening. While carload lots of

6-in. may be had from some buyers at \$22, the usual quotations are from \$22.50 to \$23 per net ton, tide-water.

**Ferroalloys.**—As was anticipated, the price of 80 per cent. ferromanganese has been advanced, and \$53.50, Baltimore, is now quoted for forward delivery, and the market is strong at that price. Sales have been made at the higher quotation and others aggregating about 4000 tons are said to be pending. For spot or nearby, \$56 is asked, but the demand is quiet. The advanced price is a result of increased consumption both here and abroad, while there has been no material increase in production. On the part of sellers, the advancing tendency is a source of satisfaction, for they say it is time that ferromanganese was getting on a "living basis." In the last three months, ferromanganese has been arriving at American ports at a rate seldom, if ever, equaled. Ferrosilicon, 50 per cent., is quiet but firm at \$72.50 for carload lots and ranging down to \$70 for larger shipments.

## Metal Market

NEW YORK, August 28, 1912.

### The Week's Prices

		Cents Per Pound for Early Delivery.					
Copper, New York.		Electro-lytic.		Lead.		Spelter.	
Aug.	Lake.		Tin, New York.	New York.	St. Louis.	New York.	St. Louis.
22.....	17.70	17.62½	46.05	4.50	4.42½	7.10	6.95
23.....	17.70	17.62½	46.25	4.50	4.42½	7.10	6.95
24.....	17.75	17.62½	.....	4.50	4.42½	7.20	7.05
26.....	17.75	17.65	46.20	4.65	4.57½	7.20	7.05
27.....	17.75	17.65	46.10	4.65	4.57½	7.20	7.05
28.....	17.75	17.65	46.25	4.65	4.57½	7.20	7.05

The strength of copper is fully maintained and has been supported by good buying. Tin is quiet, but prices are well sustained. The price of lead has been advanced \$3 per ton, and it is strong at that figure. Spelter is firm at higher prices. Antimony is unchanged.

### New York

**Copper.**—Despite the reluctance of copper users to buy at present prices, which approximate 17.75c., 30 days delivery, and particularly to buy advanced positions, there has been for some days a good business in the metal. The producers have been the sellers for the most part, and authoritative data as to the volume of sales are lacking, although it unquestionably ran into many millions of pounds, including both Lake and electrolytic, with probably the better trading in Lake. The deliveries specified were for September, October, November and a small amount in December, the sales being on both domestic and foreign accounts. Lake was sold on a basis of 17.75c. cash, delivered, and electrolytic, to American consumers, at least, at 17.75c. delivered, cash 30 days, with quite a few transactions at 17.65c. to 17.70c. cash, New York. Spot and September copper is not plentiful, and where found commands a premium, one special lot of September having been sold to a consumer in urgent need at 17.75c. cash, New York. Casting copper is quoted at 17.00c. The present trend of the market is strong, with some of those interested predicting still greater strength. It is evident, however, that consumers fear being caught with contracts at top prices after a decline has set in. They are not buying far into the future and meantime must accept sellers' prices. In London to-day spot copper is quoted at £79 12s. 6d. and futures at £79 16s. 3d. The exports this month total 22,801 tons.

**Pig Tin.**—The market in pig tin has been very dull, the light demand indicating that many consumers are timid because of the prices asked, while others are using metal previously contracted for. Arrivals from abroad continue very fair, a large part of the importations going into consumption, although a considerable quantity is stopping at New York warehouses, and it is believed that the amount shipped into consumption will fall below that of July. The London market is seemingly without definite trend, fluctuating moderately in characteristic fashion, but appearing to have considerable strength. The price of tin in New York to-day was quoted at 46.25c. The price for spot in London this morning was £211 and of futures £209 15s. The arrivals this month were 4175 tons, and there is afloat 2145 tons.

**Tin Plates.**—The feature in tin plate is its strength and a very general feeling, almost amounting to certainty, that an advance will soon come. The mills continue working to nearly full capacity and are taking

no business at present prices for delivery next year. The price of 100-lb. coke plates continues at \$3.74, New York.

**Lead.**—As was predicted in the report a week ago, the price of lead has been advanced \$3 per ton by the American Smelting & Refining Company. While the volume of business is not exceptional, there has been and still is a generally bullish feeling in the trade. London is very strong, the quotation there being £20 10s. per ton, which is the highest level reached in some time. The price in New York is quoted at 4.65c. and in St. Louis is 4.57½c.

**Spelter.**—Like most of the metals spelter shows greater strength, having advanced the latter part of last week. It is quoted to-day at 7.20c., New York, and sales have been made as high as 7.35c.

**Antimony.**—The week brought no changes in the antimony situation, and prices quoted continue at 8.60c. for Cookson's, 7.87½c. for Hallett's and 7.75c. for Chinese and Hungarian brands.

**Old Metals.**—More inquiry is being received. Dealers' selling quotations are firmer, though unchanged, as follows:

	Cents per lb.
Copper, heavy and crucible .....	16.00 to 16.25
Copper, heavy and wire .....	15.50 to 15.75
Copper, light and bottoms .....	14.00 to 14.25
Brass, heavy .....	10.00 to 10.25
Brass, light .....	8.25 to 8.50
Heavy machine composition .....	13.00 to 13.25
Clean brass turnings .....	9.50 to 9.75
Composition turnings .....	12.00 to 12.50
Lead, heavy .....	4.40
Lead, tea .....	4.15
Zinc, scrap .....	5.50

#### Chicago

AUGUST 27.—The market of the past week has been characterized by the strong position of copper and tin, particularly the former. Producers have not materially advanced their quotations, but market transactions have brought out numerous instances of higher prices. In old metals an increasing demand for copper is also noted, though no quotable advances in prices are apparent. We quote as follows: Casting copper, 17.50c.; Lake, 17.87½c. to 18c., in carloads for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, carloads, 47.25c.; small lots, 49.25c.; lead, desilverized, 4.60 to 4.65c. for 50-ton lots; corroding, 4.85c. to 4.90c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 7.10c. to 7.20c.; Cookson's antimony, 9c., and other grades, 8.50c. in small lots; sheet zinc is \$8.75 f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 14.75c.; copper bottoms, 13c.; copper clips, 14c.; red brass, 12c.; yellow brass, 9.25c.; lead pipe, 4c.; zinc, 5c.; pewter, No. 1, 28.50c.; tinfoil, 33c.; block tin pipe, 40c.

#### St. Louis

AUGUST 26.—The metal markets here have continued to follow the New York quotations to a great extent. There was a firmer feeling in spelter and higher prices are noted. In lead there was a sharp change in the form of decided advances. The quotations to-day are: Lead, 4.50c. to 4.57½c.; spelter, 6.97½c. to 7c.; Lake copper, 18.10c. to 18.22½c.; electrolytic copper, 18c. to 18.12½c.; antimony, Cookson's, 8.70c. In the Joplin district the zinc ore market was firmer under the improvement in spelter. The best price reported paid for zinc ore was \$60 a ton on an assay basis of 60 per cent. The basis price ranged from \$53 to \$57. Calamine brought \$26 to \$28 on a 40 per cent. basis, with \$35 as the top price paid. Lead ore was weak at \$56. On miscellaneous scrap we quote as follows: Light brass, 5.50c.; heavy brass and light copper, 9.50c.; heavy copper and copper wire, 10.50c.; pewter, 21c.; tinfoil, 31c.; zinc, 3.50c.; lead, 3.50c.; tea lead, 3c.

The Union Electric Light & Power Company, St. Louis, closed a contract last week for 113 miles of electric cable to carry current to be derived from the Keokuk hydroelectric plant. The total cost will be a little in excess of \$1,000,000. The contract was divided because of the inability of any one concern to handle it in time. Large portions went to the General Electric Company and the Standard Underground Cable Company. This cable is to be used in distributing the power after it has been turned over to the company at the city limits by the Mississippi River Power Distributing Company, and it will all be laid in underground conduits.

It is expected that Union furnace at Ironton, Ohio, will blow in within a few days. It will make basic iron.

## Iron and Industrial Stocks

NEW YORK, August 28, 1911.

With no specially unfavorable influences developing the stock market has shown some disposition to react. Prices of securities have therefore not been so strong as in the preceding week, although fluctuations have not been wide. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Bald. Loco., com...	58¼-60	Pressed Steel, com...	37¼-38¼
Bald. Loco., pref...	105¼-106	Pressed Steel, pref...	103-103½
Beth. Steel, com...	40¼-41¾	Railway Spring, com...	37¼-38¼
Beth. Steel, pref...	72¾-74	Republic, com...	28¼-29¼
Can. com...	39¼-41¾	Republic, pref...	90½-92
Can. pref...	118½-119¾	Sloss, com...	56-57¼
Car & Fdry., com...	60¾-61¾	Sloss, pref...	100
Car & Fdry., pref...	118¾	Pipe, com...	19¾-20¾
Steel Foundries...	37-38¼	Pipe, pref...	59½-61
Colorado Fuel...	31-33¼	U. S. Steel, com...	73¾-75
General Electric...	182-183¾	U. S. Steel, pref...	112½-113¾
Gr. N. Ore Cert...	44¾-47¼	Westinghouse Elec...	86¾-89
Int. Harv., com...	121-122	Va. I. C. & Coke...	59¾-61
Int. Pump, com...	26½-27	Am. Ship, com...	45
Int. Pump, pref...	81½	Chic. Pneu. Tool...	52½-53
Lackawanna Steel...	45-45½	Cambria Steel...	44¾-46¾
Locomotive, com...	45¼-46¾	Lake Sup. Corp...	33¾-34
Locomotive, pref...	109-109¼	Pa. Steel, pref...	97¾-99¾
Nat. En. & St., com...	17½-19¼	Warwick...	10½
Nat. En. & St., pref...	90½-90¾	Crucible Steel, com...	17¾-18
Pittsburgh Steel, pref...	102½	Crucible Steel, pref...	96½-98

#### Dividends Declared

The Wheeling Steel & Iron Company, regular quarterly, 2 per cent., payable September 10.

The Railway Steel Spring Company, regular quarterly, 1¾ per cent. on the preferred stock, payable September 20.

The American Locomotive Company, regular quarterly, 1¾ per cent. on the preferred stock, payable Oct. 21.

#### Personal

President Farrell of the United States Steel Corporation left New York this week for an inspection trip of several days, taking in plants at Sharon and Farrell, Pa., and at Mingo Junction, Bridgeport, Bellaire and Wheeling.

President L. R. Lemoine, of the United States Cast Iron Pipe & Foundry Company, sailed for Europe August 24, to be absent for several weeks.

A. H. Baldwin, formerly chief of the Bureau of Manufactures, has been appointed chief of the new Bureau of Domestic and Foreign Commerce of the Department of Commerce and Labor, Washington, D. C. O. P. Austin, formerly chief of the Bureau of Statistics, will be his first assistant and E. A. Brand another assistant. The new bureau is a combination of the former Bureau of Manufactures and the Bureau of Statistics.

Jonathan R. Jones, vice-president and treasurer of the Alan Wood Iron & Steel Company, Philadelphia, Pa., is spending a month's vacation in Maine.

The engineering department staff of the Thomas W. Pangborn Company, sand-blast specialist, Hagerstown, Md., has been added to recently through the association of Charles T. Bird and Samuel C. Barnes. Mr. Bird has been appointed assistant mechanical engineer, as assistant to Foster J. Hull, while Mr. Barnes becomes a member of the general engineering staff. Mr. Bird has for some years been associated with the American Steel Foundries, and Mr. Barnes has been identified with the Fricke Company, Waynesboro, Pa.

The Philadelphia Foundrymen's Association will resume its regular monthly meetings at the Hotel Walton on the evening of September 4, when A. W. Moyer, of the Rockwell Furnace Company, New York City, will read a paper on the Rockwell core oven. Secretary Howard Evans is planning to open the meeting with an informal dinner at 7:15. This will replace the usual luncheon which follows the meetings of the association.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, will build an addition to its foundry, 34 x 98 ft., while another building now under erection will be used for a pattern storage shop.

The Ashland, Wis., furnace of the Lake Superior Iron & Chemical Company, which has been out for some weeks for relining, will be blown in about September 15.



## Obituary

BAXTER B. NOYES, of B. B. Noyes & Co., manufacturers of gray iron castings and hardware specialties, Greenfield, Mass., was killed July 22 by a fall from a staging in the rear of the foundry. He was born in New Salem, Mass., August 22, 1843; served an apprenticeship in the blacksmith trade, and at the age of 18 established a business of his own as blacksmith and wheelwright. In 1886 he started in business in Greenfield, beginning the manufacture of hardware and tools on a small scale. Having an inventive turn of mind, he patented many articles and became one of the best known manufacturers in his section. He took a great interest in public affairs and in all movements for the improvement of the community. He leaves a widow, two daughters and one son. His son, Winthrop T. Noyes, has been associated in business with his father for several years.

FRANK J. MULCAHY, vice-president and general manager of the Crane Valve Company, Bridgeport, Conn., died August 19, aged 53 years. He was born in Cleveland, Ohio. In his early life he was a telegraph operator, and later a train dispatcher for the Pennsylvania Railroad, and then went to the Murphy Varnish Company, and later to the Deering Harvester Company as purchasing agent. Because of his success in this latter work, he was made purchasing agent for the World's Columbian Exposition in 1891. At the close of the fair he became the purchasing agent of the Crane Valve Company, and in 1905 was promoted to the office of general manager. He was a member of the Catholic Club, Engineers' Club, Hardware Club and Machinery Club, New York, and the Brooklawn Country Club and the Bridgeport Yacht Club of his home city. He leaves a widow.

WILLIAM S. LAMSON, Lowell, Mass., founder of the Lamson Store Service Company and of the Mason Safety Tread Company, died August 16, aged 66 years. Trained in the dry goods trade, he saw the opportunity for lessening labor in the handling of cash, and invented the device upon which the Store Service Company was built. While abroad in 1895 he saw the safety tread, the manufacture of which he began. He was the president and general manager of this company at the time of his death. He served in the Civil War. He leaves a widow and two sons.

CHARLES SUMNER DENNISON, president and treasurer of the Dennison Mfg. Company, South Framingham, Mass., died at his summer home at West Falmouth, Mass., August 22, aged 54 years. Born in Boston, he was educated in public and private schools and at the Highland Military Academy, Worcester, Mass., and at the Massachusetts Institute of Technology. Upon graduation he entered the business of his father, Eliphalet W. Dennison. He was prominent in other business corporations. He leaves a widow and two daughters.

JESSE BANKS CORNWALL, Bridgeport, Conn., for many years a member of the firm of Cornwall & Patterson, manufacturers of piano hardware, died August 16, aged 66 years. A native of Terryville, Conn., his first employment was with the Eagle Lock Company of that town. Thirty-six years ago he began the business of which he was an active head until his retirement two years ago.

EDWARD H. BALL, vice-president and one of the founders of the Chicago Belting Company, died August 23 at his home in Evanston, Ill., following a nervous breakdown. He was born in 1857 and was educated in Milwaukee and at Princeton University.

The Wrought Iron Range Company, one of the largest manufacturers of ranges in the country, has removed from the center of St. Louis to its new plant on the northwestern city limits. It will utilize Keokuk hydroelectric power when it is distributed in St. Louis. The plant is of the most modern type, and in its construction is believed to have eliminated the fire hazard, being of fireproof construction and also divided into apartments which can be instantly isolated by fire doors.

The cooperage plant of Grief Brothers, Niagara Falls, N. Y., recently destroyed by fire, is to be rebuilt on a more extensive scale on a new site in the northern section of the city. Considerable new machinery will be required.

## Pittsburgh and Vicinity Business Notes

The report that the National Tube Company, Pittsburgh, will build four more open hearth furnaces at its plant at Lorain, Ohio, is not quite correct. The company will probably build three more 80-ton furnaces there, which will make a total of nine furnaces of that size. The company has been running short of steel at Lorain for some time, and work on the new furnaces will likely start in the near future. There is no intention of building a by-product coke plant at Lorain, as reported.

Work is progressing rapidly on the two new blast furnaces of the Pittsburgh Steel Company at Monessen, Pa., for which the Garrett-Cromwell Engineering Company, Cleveland, is the engineer. The iron work and the stoves are about finished, and the furnaces will be ready for blast early in the coming year. The General Refractories Company is furnishing the fire brick for one of the furnaces. A contract has just been placed with the Raymond Concrete Company, New York, for about 1500 Raymond concrete piles for the foundations for trestles and new buildings. The furnaces will have a daily capacity of about 500 tons each.

The car repair shops of the Pennsylvania Railroad at Verona, Pa., are working 69 hours a week, comprising 12 hours five days and 9 hours on Saturday. The shops at Pitcairn and Altoona, Pa., are each working 10 hours five days and 9 hours on Saturday. It has been several years since these shops were running as full as they now are.

The Pennsylvania Engineering Works, New Castle, Pa., has the contract for repairing No. 4 blast furnace of the Jones & Laughlin Steel Company at Aliquippa, Pa., recently damaged by a storm.

The Titusville Forge Company, Titusville, Pa., has signed a contract with the Titusville Light & Power Company for 275-hp of electricity with the privilege of doubling it. To supply this, the power company will place a contract with the Titusville Engine Company for a 200 h.p. gas engine, thus adding to its equipment a fourth engine of this type. A generator has been ordered from the General Electric Company, Schenectady, N. Y.

The Westinghouse Machine Company will add a new machine shop, 72 x 400 ft., to its plant at East Pittsburgh, Pa. It will be two stories, and will be of steel construction and fire proof.

The Valley Machine Company, Parkersburg, W. Va., has been organized with a capital stock of \$150,000. The incorporators are B. B. Putnam, Dayton, Ohio, and Ferguson O'Connor, R. G. Stiles and John Marshall, all of Parkersburg.

The Erie City Iron Works, Erie, Pa., through its Pittsburgh office, T. J. McGraw, sales manager, has secured the following contracts: Vanadium Steel Company, 200 h.p. Erie City water tube boilers; Allegheny Coke Company, Pike County, Ky., a complete power plant, including 300 h.p. boiler units, 500 h.p. engine of the Lenz poppet valve type, and 250 k.w. generator; Brier Hill Steel Company, Youngstown, Ohio, 2000 h.p. additional Erie City vertical water tube boilers, equipped with Foster super-heaters, making a total of 7000 h.p. boilers of that type installed for this concern; Superior Steel Company, Carnegie, Pa., four 400 h.p. Erie City water tube boilers; Vanadium Alloys Steel Company, Latrobe, Pa., a 250 h.p. Erie City vertical water tube boiler.

George Westinghouse, Pittsburgh, has been granted a patent covering his air spring device for automobiles.

Samuel Crum and Joseph Miller have been appointed receivers of the Independent Steel Company, Kenova, W. Va. The former receivers were recently discharged by an order of the Federal court, and the matter was thrown back into the hands of the State court.

The Allegheny Foundry & Machine Company, Pittsburgh, will build a plant at Glassmere, Pa., near that of the Allegheny Plate Glass Company. It has bought the equipment of the Roberts Boiler & Tank Company, Queens Junction, Pa., to be shipped to Glassmere.

The Universal Shoe & Forge Company, Pittsburgh, has been organized with a capital stock of \$50,000, proposing to erect a plant for the manufacture of horse shoes and automobile parts. C. H. Ehlers is president; J. H. Wall, vice-president, and P. A. K. Black secretary and treasurer.

## Youngstown Sheet & Tube Extension Contracts

In connection with additions and extensions to its present mills at East Youngstown, Ohio, the Youngstown Sheet & Tube Company has let contracts as follows:

To the McClintic-Marshall Construction Company, Pittsburgh, a triangular building at the rod and wire department for nail machines and machine shop; extension to No. 1 warehouse at tube mill; extension to Nos. 1 and 2 threading floor buildings at tube mill, and an extension to No. 2 electric power house building.

To the United Engineering & Foundry Company, Pittsburgh, one 12-in. motor-driven pipe-straightening press, capacity 2 to 12-in. pipe.

To the William Tod Company, Youngstown, one hydraulic accumulator for working pressure of 800 lb. per sq. in.

To the Taylor-Wilson Mfg. Company, Pittsburgh, six motor-driven pipe-threading machines, capacity 1 to 3-in. pipe.

In connection with construction work now under way, the company has contracted with the McClintic-Marshall Construction Company for two parallel pipe storage yard runways, about 475 ft. long, with 77 ft. span, and with the Morgan Engineering Company, Alliance, Ohio, for two 10 ton three-motor double hoist, overhead electric traveling cranes, span 77 ft., for these yards.

In connection with the construction of its new blast furnace D, the company has placed a contract with the McClintic-Marshall Construction Company for a new cinder crane runway; extension to No. 4 boiler house, cast house building, and extension to ore bin trestle; with the William B. Pollock Company, Youngstown, four 45-ton hot metal cars and six 45-ton hot metal ladles; with the Otis Elevator Company, one single skip blast furnace hoist, complete with motors and controllers; with the Southwark Machine Company, Philadelphia, one Rateau turbo-blower, capacity normal, 40,000 cu. ft. free air per minute against 30 lb. pressure, direct connected to steam turbine.

The company has also ordered from the Standard Steel Car Company, Pittsburgh, two 100,000-lb. standard gauge flat cars to be used in connection with its new open hearth department.

## Cracking of Concrete Structures

The determination of the physical properties of concrete is among the various things being covered by the Bureau of Standards in its general investigation of structural materials. At the suggestion of engineers and other interested parties the cause of cracking in concrete structures where the necessity for expansion joints is being questioned is being studied in considerable detail. Reference marks for this purpose were recently placed on some of the typical old and new concrete work in Wayne County, Mich., and also at Greenwich, Conn. From time to time throughout the year measurements will be taken to determine the expansion or contraction in the concrete caused by variations in the temperature and the changes in volume which occur during the hardening process. Similar reference marks are being placed on the lock walls of the Panama Canal and various other structures, and it is expected that when this research is completed much valuable information will be obtained.

**Quebec Pig Iron Production in 1911.**—The official report of the Mines Branch, Province of Quebec, for 1911 shows that the iron production was entirely by the Canada Iron Furnace Company, which had in blast one of its two furnaces at Drummondville. There has been a serious decline the last few years in the iron ore industry of the province. The yield from the bog iron ore deposits of the St. Maurice and of Drummond County, the main source of supply of the charcoal blast furnaces of Radnor and Drummondville, has been decreasing, without immediate prospect of other iron ore deposits to replace them. The material charged into the Drummondville furnace during 1911 was as follows, in gross tons: Quebec iron ore, 1043; Ontario and other ore, 768; charcoal, 1185; limestone, 187. The pig iron product of the furnace was 655 tons, valued at \$17,280.

## The Self-Demagnetization of Steel

A paper with the above title was presented at a meeting of the Physical Society of London, held June 28, of which the following extract is taken from *Engineering*:

The constituents, iron and iron carbide, are easily traceable in annealed steel owing to the differences between their magnetic properties. The ferro-magnetic transition point of the carbide is about 500 deg. C. lower than that of the iron, and the carbide is also magnetically harder at ordinary temperatures and possesses greater coercive force. Like iron it is magnetically very soft at temperatures near the transition point.

In consequence of these facts, the effect of heat upon the residual magnetism of an annealed steel rod is peculiar, and at first sight mysterious. As the temperature rises, the residual magnetism falls continuously until it becomes zero in the neighborhood of 200 deg. C. It then changes sign and reaches a maximum negative value at about 220 deg. C. Beyond this point the negative magnetization decreases slowly and finally becomes imperceptible between 700 and 800 deg. C. If the rod is cooled from this latter temperature, it remains without perceptible polarity as the temperature falls, but if the heating is interrupted before the whole of the residual magnetism is destroyed the behavior on cooling is quite different.

In the paper a case was cited where the rod was heated until at about 600 deg. C. the residual intensity of magnetization was about  $-0.5$ . On cooling, the intensity increased to a maximum negative value of about  $-1.6$  at about 125 deg. C. Then the magnetization began to fall, reaching zero at about 210 deg. C., became positive and finally was about  $+15.5$  at the air temperature. An explanation of these and other results that were described is given in the paper in which it is shown that the residual magnetism of short annealed steel rods is determined by the retentivity of the carbide and that the residual polarity of the iron is negative. The iron may thus be said to contribute less than nothing to the residual magnetism of the rods.

## Doubling Lifting Magnet Capacity

Experiments recently made at the Zenith furnace in Minnesota have resulted in practically doubling the capacity of the lifting magnets employed for handling pig iron. Formerly this method of handling furnace pig iron was restricted to the quantity that could be lifted under the ordinary plan of picking up the iron from the ground or floor, and with the pigs lying flat only a relatively small number would adhere to the magnet. In these experiments the pigs were stacked vertically by standing each erect on its end. This arrangement allows a greater number of pieces to make direct contact with the magnet pole-pieces, and the lifting capacity of the magnet is correspondingly increased. With a given magnet which was able to pick up only 1000 lb. of pigs lying flat, it was found that when the pigs were stacked vertically on the floor the load was increased to 2000 lb. The doubling of the magnet's lifting capacity was obtained with only a slight additional labor charge for the stacking of the pigs.

## New Publication

**Rubber Trade Directory of the World.** Second edition. 313 pages. 6 x 9-in. Published by the India Rubber Publishing Company, 15 West Thirty-eighth street, New York. Price \$3.50.

This directory is of value to all in any way interested in the production or utilities of rubber, and supersedes a similar volume published by the same company in 1908. It is much more inclusive than the earlier edition, and embraces the important members of the rubber trade in all its branches the world over, the general classification of the directory being geographical. Among the subdivisions are such departments of the trade as rubber goods factories, reclaimers, rubber planting companies, rubber and waste dealers, manufacturers of compounding ingredients, rubber machinery, list of American trademarks, trade organizations and other information.



## New Tools and Appliances

*This is essentially a news department for which information is invited*

**File Handle.**—The Doane Mfg. Company, Boston, Mass., has recently placed on the market the Doctor file handle, which is said to possess the advantages of being non-splitable and holding the file securely. The ferrule is made of heavy pressed steel enlarged at the head and having an inwardly returned sharp-edged lip, which firmly locks the wooden portion within the enlarged end of the ferrule when driven into place. The wooden section is shaped to fit the hand and is smoothly finished. Five sizes of handle for files ranging from 4 to 20 in. in length are made.

**Aluminum Matting.**—For use wherever the matting is required to withstand severe wear the Metallic Automobile Matting Company, Rochester, N. Y., has brought out a type of aluminum matting to which the trade name Pyrna has been given. It is pointed out that this matting does not rust, tarnish or stain from the effects of oil and grease as does rubber matting, and at the same time the cost is less. It is regularly furnished in rolls varying in width from 9 to 36 in., and if desired other widths can be supplied to order when a sufficient quantity is ordered. In this matting the surface of the wearing side is punched so that a series of small projections is formed. It is said to be very easy to apply, as the matting can be cut with a tinner's snips or an ordinary pair of shears.

**Portable Grinding Machine.**—A recent product of the Chicago Pneumatic Tool Company, Chicago, Ill., is a portable pneumatic grinding machine. The air supply is controlled by a trigger in the grip handle which when pressed down opens the throttle and it is kept in that position until pressure on a button at the side releases it. As an aid to balancing the machine, the air hose is attached to the grip handle and at the same time it is also out of the operator's way. It will mount an emery wheel 8 in. in diameter with a 1-in. face, and the weight is approximately 20 lb.

**Milling Cutter Spacing Collar.**—Schuchardt & Schütte, West Street Building, New York City, have brought out an adjustable spacing collar for straddle mills. The collar consists of two members, one threaded externally and the other internally with a buttress thread. The outside of one collar has graduations indicating an end movement of 0.002 in. on the collars and the other one has a projecting index line to facilitate reading.

**Hack Saw Frame.**—The West Haven Mfg. Company, New Haven, Conn., has brought out an extension hack saw frame which can be used with blades ranging from 8 to 12 in. in length. The frame is nickel plated and highly polished and the grip can be slid along the frame to any one of four positions, being held there by a notch in the frame.

**Boring and Chucking Machine.**—A four-spindle vertical boring and chucking machine has been brought out by the Turner Machine Company, Danbury, Conn. All of the spindles are driven through gears and the driving mechanism is so arranged that each spindle can be driven at the speed most suitable to the work in hand. Four automatic feeds are provided. The machine will drill to the center of a 26-in. circle and the distance between the spindle and the table is 20 in. The distance between the spindle and the base is 36 in. and the spindle traverse is 10 in. The spindles are reamed to conform to a No. 4 Morse taper and the table has a traverse of 20 in. The floor space occupied is 26 x 59 in. If desired this machine can also be furnished with six spindles, any one of which can be instantly thrown into the operating position.

**Six-Spindle Gang Drilling Machine.**—For drilling the cotter pin holes in freight car brake pins, bolts and similar work, the Moline Tool Company, Moline, Ill., has brought out a six-spindle gang drilling machine equipped with a sliding pin jig. This machine, with the exception of the sliding pin jig, is the same as the builder's standard No. 6 drilling machine equipped with cam feed. The periphery of the cam is notched at intervals to break the chips and relieve the drills while going through. The jig has twelve stations so that six pins can be removed and replaced while six others are being drilled, this being accomplished by sliding the jig in an endwise direc-

tion when the table is at the bottom of its travel. The drilling operation is thus made practically continuous and the feed can be set to run continuously or to throw out each time the table drops. A clamping plunger is set on an angle for clamping each pin in place and there is a lever to operate each plunger. The equipment of the machine includes a pump, tank and piping, jig and drill sockets.

**Belt Idler.**—Charles Miller, Industrial Building, Syracuse, N. Y., is making a belt idler which is intended for use where the belt is not in continuous operation. This idler is placed beside the tight pulley on the shaft and as there are rollers on the periphery the belt can be easily shifted off and on.

**Universal Milling Machine.**—The Rockford Milling Machine Company, Rockford, Ill., has brought out a universal machine in which the front face of the column is finished throughout its entire distance and at the top forms a flange to which the flange support for the overhanging arm is secured. This flange also serves as a seat for the vertical and slotting attachments which are driven from the back of the main spindle by gearing and a shaft through the hole in the upper part of the frame. This machine has a table measuring 38 x 9 in. and 14 feed changes ranging from 0.005 to 0.157 in. per revolution of the spindle are available. The vertical, longitudinal and cross feeds are all automatic and have maximum lengths of 18, 25 and 7½ in. respectively. The spindle is reamed to conform to a No. 10 Brown & Sharpe taper, which is the same as that of the dividing head and the tools can be interchanged between these two spindles. When the machine is equipped with a two-speed countershaft, 16 spindle speeds, ranging from 22 to 309 r. p. m. can be secured. The swing of the dividing head is 7½ in. and the tail block is offset so that larger diameter end mills can be employed for squaring shafts and performing similar operations.

The Wheeling Sheet & Tin Plate Company has decided to locate its new tin plate plant at Yorkville, Ohio, seven miles above Wheeling, on the Ohio side of the river. The company has placed an order with the Bass Foundry & Machine Company, Fort Wayne, Ind., through its Pittsburgh office, George T. Ladd manager, for three 32 x 60-in. Bass Corliss engines. Two are to be equipped with heavy type rope drive, jack shafts, pillow blocks, etc., to drive the 10 hot mills and one is to be arranged for gear drive to drive the 12 cold mills. Two 18 x 19 in. single valve side crank Ames engines, made by the Ames Engine Company, Oswego, N. Y., are to be arranged for direct connection to generators. An order has also been given for four 500-hp. Milne vertical water tube boilers, made by the Milne Water Tube Boiler Company, New York City, the boilers to be set single and to be complete with all appurtenances for installation.

The Arthur L. Stevens Company, Chicago, is issuing from its engineering offices a series of bulletins, of which the first illustrates a recent installation of a Stevens regenerative furnace serving a 2000-ton hydraulic forging press. Bulletin No. 2 illustrates the Stevens regenerative annealing furnace, suitable for annealing malleable castings with producer gas. It cites various advantages of this type of furnace and some of the time-saving methods made possible by its use.

President James A. Campbell, of the Youngstown Sheet & Tube Company, Youngstown, Ohio, has given out a statement in reference to the usual annual division of the profits of the company with its employees, which is in part as follows: "While the year ending June 30 showed about the smallest earnings in recent years, as compared with the capital invested, yet there will undoubtedly be a division in profits made with the employees of the company."

The Babcock & Wilcox Company, Farmers' Bank Building, Pittsburgh, has received an order from the Jones & Laughlin Steel Company for 4000 hp. Rust water-tube boilers to be installed at its Aliquippa works, to utilize waste heat from the coke ovens.

## The Two Coming Congresses

### Programme for Next Week's Meeting on Testing Materials and Announcements Regarding the International Congress of Applied Chemistry Immediately Following

The programme of the sixth congress of the International Association for Testing Materials, which will occupy next week in the Engineering Societies Building, New York, is given below. The subjects have been grouped under three general classes as follows: A, metals; B, cement and stone; C, miscellaneous materials. The list of Section A papers is here given and also a few others likely to be of interest to readers of *The Iron Age*. Before the Testing Materials Congress adjourns, the eighth International Congress of Applied Chemistry will convene, but while its opening session is scheduled for Wednesday, September 4, at Washington, D. C., the technical sessions will not begin until Friday morning, September 6, and will be held in New York. These meetings, which will extend into the following week, will practically all take place at Columbia University. The papers of this congress are grouped under 24 heads and incidentally include some 1100 titles. At this writing no less than 700 papers are in hand. One of the sections is devoted to mining and metallurgy and these sessions will be held jointly with the American Institute of Mining Engineers. The programme of the Testing Materials Congress is as follows:

#### Programme of Congress on Testing Materials

##### MONDAY, SEPTEMBER 2.

- 8.00 A. M. Registration.
- 10.00 A. M. Meeting of the Council of the International Association for Testing Materials.
- 2.00 P. M. Meeting Commissions, International Association for Testing Materials.
- 8.00 P. M. Formal Reception to the Members of the Congress and the ladies accompanying them in the Engineering Societies Building under the joint auspices of the American Society for Testing Materials, American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Institute of Mining Engineers.

##### TUESDAY, SEPTEMBER 3.

- 9.00 A. M. Formal Reception of the Official Delegates from Governments by the President and Members of the Council of the International Association for Testing Materials.
- 10.00 A. M. Opening of the Congress. Addresses of Welcome. Presidential Address.
- 2.00 P. M. Sectional Sections. Section A—Hardness and Wear Tests; Impact Tests; Slag Inclusions. Section B—Fine Particles in Cement; Strength of Cement; Pozzolanic Admixtures. Section C—Paints; Bitumen.
- 8.00 P. M. Inspection of the Public Library, Fifth Avenue and Forty-first Street.

##### WEDNESDAY, SEPTEMBER 4.

- 9.00 A. M. Section A—Corrosion; Pipes; International Specifications for Iron and Steel. Section B—Tests for Constancy of Volume of Cements; Proposed New Sulphuric Acid Limit. Section C—Timber Tests; Wood Treatment.
- 12.30 P. M. Trip by steamboat up the Hudson River, visiting the United States Military Academy at West Point, N. Y.

##### THURSDAY, SEPTEMBER 5.

- 9.00 A. M. Section A—Endurance Tests; Magnetic and Electric Properties; Properties at High Temperatures. Section B—Durability of Stone and Masonry; Tests of Paving Blocks and Ballast; Cement, the Prism Test, and Plastic Mortar. Section C—Explosive Tests; Fire Tests; Oil Testing; Tests of Roadmaking Materials.
- 2.00 P. M. Section A-1—Unsoundness and Cracks in Steel; Steel Rails. Section A-2—Cast Iron; Special Steels. Section B—(No session). Section C—Public Testing Laboratories; Rubber Analysis and Testing. Illustrated Addresses.
- 8.00 P. M. Reception to Foreign Members and ladies accompanying them and Official Delegates by the American Society of Civil Engineers, 220 West Fifty-seventh Street.

##### FRIDAY, SEPTEMBER 6.

- 9.00 A. M. Section A—Non-ferrous Metals and Alloys; New Tests; Welding. Section B—Action of Seawater on Concrete; Porosity and Waterproofing; Electrolytic Injury. Section C—Nomenclature of Stress; Testing Methods and Details.

- 2.00 P. M. Section A—Investigation of New Testing Methods; Micrography and Micrographic Researches; Nomenclature of Iron and Steel. Section B—Reinforced Concrete; Tests for Concrete. Section C—Stress Factors; Reliability of Tests; Tests of Structures. Illustrated Addresses.
- 6.00 P. M. The evening will be free.

##### SATURDAY, SEPTEMBER 7.

- 10.00 A. M. Closing General Session of the Congress.
- 2.00 P. M. Reception by the Officers of the American Museum of Natural History.
- 8.00 P. M. Reception by the Officers of the Metropolitan Museum of Art.

##### SUNDAY, SEPTEMBER 8.

- 1.32 P. M. Official Excursion leaves Pennsylvania Railroad Station, Thirty-second Street and Seventh Avenue.

#### Most of the Section A Papers

- Recent Researches at the National Laboratory on the Resistance of Metals to Alternating Stresses. T. E. Stanton.
- Endurance Tests of Metals. O. Boudouard.
- Endurance Tests of Machine Steels. J. O. Roos.
- Some Static and Dynamic Endurance Tests. J. O. Roos.
- Repeated-stress Testing. J. B. Kommers.
- The Consideration of the Magnetic and Electric Properties of Metals in Connection with their Mechanical Testing. C. W. Burrows.
- The Tensile Properties of Steel in Relation to Magnetic and Other Hardness Tests. R. P. Devries.
- Contribution on the Knowledge of the Relation between Temperature and the Magnetic Properties of Iron and Steel. Schneider & Co., Laboratory.
- Some Mechanical Properties of Metals at High Temperatures. F. Robin.
- Slag Inclusions. W. Rosenhain.
- The Solid Non-Metallic Impurities in Steel. H. D. Hibbard.
- Welding of Blow-holes and Cavities in Steel. J. E. Stead.
- A Method of Detecting Rail Fractures in Advance. A. Mesnager.
- Some Features of the American Steel Rail Situation. J. P. Snow.
- Notes on Features Associated with Tests of Steel Rails. J. E. Howard.
- Tests of Rails for Elongation and Ductility of Metal under the Drop-testing Machine. P. H. Dudley.
- American Investigations of Steel Rails Conducted Jointly by the Railroads and Steel Manufacturers. M. H. Wickhorst.
- Ensuring Soundness in Rails. R. W. Hunt.
- Hardness Testing and Resistance to Wear. E. H. Saniter.
- Tests of Wear of Steels. F. Robin.
- Tests for Hardness, Elastic Limit, and Resilience under Impact. W. Guillery.
- Researches on the Hardness of Steels. C. Grard.
- The Variation of Hardness of Steels with Temperature. F. Robin.
- Impact Tests. G. Charpy, for Committee 26.
- The Influence of Shape of Bar and Treatment of Metal on Notched-bar Impact Tests. A. Schmid.
- Impact Tests on Notched Bars. Charles Fremont.
- Impact Tests on Notched Bars for Ductile Steels. A. Gessner.
- Some Observations on the Brittleness Test. M. Derihon.
- Resilience. The Testing Laboratory for Metals of the Paris-Lyon-Mediterranée Railway Company.
- Study of the Theory of an Apparatus for Impact Tension Testing, and on the Errors of Observation in its Use. N. Davidenkof.
- Progress in the United States in Testing Full-size Pieces under Practical Conditions, and Locomotive Testing. Gaetano Lanza.
- A Test for Relative Corrodibility of Irons in Water and Aqueous Solutions. F. Lyon.
- The Action of Electrolytes on Metals under Stress. H. Baucke.
- Comparative Service Obtained with Wrought-iron and Soft Steel Pipes as Water Lines in the United States. F. N. Speller.
- Specifications for Iron and Steel. A. Rieppel, for Committee 1a.
- The Physical Significance of the Elastic Limit. H. F. Moore.
- Thermoelectric Indication of Strain as a Testing Method. J. A. Clapp and T. R. Lawson.
- The Electric Disintegration of Metals, and its Possible Use for Testing. K. Benedicks.
- The Breaking Strength of Tubes. M. Malaval.
- A New Testing Method for Steel Tubes. Charles Fremont.
- Comments on the Danish Specifications for Wrought-iron Pipes. A. C. Karsten.
- Crystalline Growth of Ferrite Below its Thermal Critical Range. A. Sauveur.
- Nomenclature of Iron and Steel Products. H. M. Howe, for Committee 53.
- Progress of Metallography from the Beginning of 1909 to the End of 1911. E. Heyn.
- Standard Magnifications for Micrographs. M. T. Lothrop and C. R. Bulley.
- Utility of a Metallographic Nomenclature. F. Robin.
- Micrographic Studies. The Testing Laboratory for Metals of the Paris-Lyon-Mediterranée Railway Company.
- The Microscopic Constituents of Iron and Steel. H. M. Howe, for Committee 24.



- A Method for the Rapid Determination of Total Carbon in Iron, Steel, Cast Iron and Ferrous Alloys. H. de Nolly.  
 Modifications of Iron below 700 deg. C. F. Robin.  
 The Life History of Pro-Eutectoid Cementite. H. M. Howe and A. G. Levy.  
 Some Metallic Phosphides. P. Jolibois.  
 Alloys by Superposition. H. C. Chatelier.  
 Researches on Bearing Metals. N. Pecoraro.  
 Note on the Wear of Bronzes. A. Portevin and E. Nusbaumer.  
 The Effect of Cold-working on the Physical Properties of Metals. W. R. Webster.  
 New Observations in the Micrography of Copper. H. Baucke.  
 Industrial Utilization of Metallography as a Check in Working Copper and Brass. C. Gard.  
 The Effect of High Temperatures on the Physical Properties of Some Alloys. I. M. Bregowsky and L. W. Spring.  
 Behavior of Copper in Impact Tests on Notched Bars. H. Baucke.  
 A New Method for Testing Rivet Steels. Charles Fremont.  
 A New Method for Steel Wire Testing. Charles Fremont.  
 A New Method for Testing Welded Metal. Charles Fremont.  
 Theory of Autogenous Welding of Steel, and its Practical Application. M. Bermann.  
 Theory of the Welding of Steel, and its Practical Application. M. Bermann.  
 The Constitution of Cast Iron and the Effects of Superheated Steam. William Campbell and John Glassford.  
 Typical American Uses of Cast Iron and Methods of Test. J. J. Porter.  
 Application of Methods of Mechanical Testing used for other Metals to Cast Iron Testing. A. Damour.  
 Investigation of the Influence of Shape of Test Bar on the Mechanical Properties of Cast Iron. J. E. Stead, for English members of Committee 1b.  
 A New Method of Mechanical Testing of Cast Iron. Charles Fremont.  
 A Proposed Test Bar for Chillable Irons. T. D. West.  
 Commercial Tendencies in Malleable Cast Iron Practice. R. Moldenke.  
 The Estimation of Pig Iron. J. Kail.  
 Mechanical Tests of Special Steels for Ship Construction. L. Fea.  
 Mechanical Properties and Structure of Some Tool Steels annealed between 600 deg. and 1000 deg. C. S. Fabry.  
 Automatic Recording of the Stress-strain Relation in Impact Tests. A. M. Gagarin.

#### Some of Section C Papers

- Notes on the Testing of Anti-Corrosion Paints. P. Labordere and F. Anstett.  
 The Practical Determination of the Viscosity of Oils. L. Fea.  
 Tests on Cylinder Oils for Superheated Steam. E. Camerman.  
 Oil Testing. M. Albrecht.  
 Fundamental Principles for the Organization of the Public Testing of Materials. A. Martens.  
 The Austrian Testing Office. E. Reitler.  
 Relation of Stress of Hardness to Bending Strength. A. Rejto.  
 The Connection Between the Yield Point and the Buckling Strength of Bars of the Same Material. O. Greger.  
 Reliability of Testing Laboratories, Testing Machines, and Strength Tests. A. Martens.  
 Tests of Structures. J. E. Howard.

#### Metallurgy at the Chemistry Congress

As stated, the technical sessions of the International Congress of Applied Chemistry begin Friday, September 6, and under the mining and metallurgy section are announced papers closely related to those considered by the Congress for Testing Materials. For example, at 10 a. m. September 6 is to be opened a session to consider micrography, tool steel characteristics, open-hearth practice, Gayley dry-blast experiences, kilns for briquetting ores and iron coke. At 1 p. m. is arranged a session on non-ferrous metals, including a paper by W. M. Corse on modern manganese bronze tests. On Saturday at 10 a. m. is scheduled a session given up to matters relating to the electric furnace.

For Tuesday, September 10, at 1 p. m. is announced a session on subjects relating to political economy and the conservation of natural resources. Among papers announced in this connection are: Extent of the Iron and Steel Industry in the United States, by John Birkinbine; Characteristics of the Electric Furnace, by C. P. Steinmetz, and Oxygen in Iron and Steel in the Electric Vacuum Furnace, by W. H. Walker.

A session at 10 a. m. September 11 is to consider peat, natural gas, etc., and the papers announced include: Beehive Coke Oven Industry in the United States, by A. W. Belden, and Fuel Economy of the Cupola, by J. J. Porter. Simultaneous with this session will be another, included

among the papers of which is one by Maximilian Toch on the condition of the Maine after 13 years' submersion.

On the afternoon of September 11 are to be discussed among others the following subjects: Influence of Cinders on Corrosion of Imbedded Iron; Characteristics of Iron Corrosion; Mill Scale as the Cause of Pitting of Steel Pipe.

#### Dwight & Lloyd Sintering Process Contracts

Contracts have been made by the American Ore Reclamation Company, 71 Broadway, New York City, with the Jones & Laughlin Steel Company, Pittsburgh, and the Eastern Steel Company, Pottstown, Pa., for the installation of the Dwight & Lloyd process for sintering flue dust.

The Jones & Laughlin Steel Company will make a first installation of two machines at its furnaces in Pittsburgh, with provision for later extensions. The building and bins will be of steel construction, and will embody a number of improvements which have been developed at the experimental installation at Birdsboro, Pa. The Jones & Laughlin Company has accumulated a large stock pile of flue dust at Aliquippa, Pa., and the treatment of this material will be provided for later.

The Eastern Steel Company will install one machine at its Warwick furnace, which will have a capacity of 80 to 100 tons per day. This works has also accumulated a considerable stock pile of flue dust.

The Dwight & Lloyd process affords a simple and efficient method of converting the large stock piles of flue dust which have accumulated at blast furnaces in the Central West into first-class ore material, and the utilization of this waste material should effect considerable saving in the cost of pig iron.

#### John Fritz's 90th Birthday Anniversary

John Fritz, who has been ill at his home in South Bethlehem, Pa., for some weeks, passed his 90th birthday anniversary last week. He was born August 21, 1822. Though the past year has been marked by increasing feebleness, his friends will think of it with special interest in being marked by the publication of Mr. Fritz's autobiography. His birthday makes timely a quotation from the preface of the book. After saying that the undertaking was due solely to the persistent urging of old friends who wanted an account of his life struggles in his own words, Mr. Fritz adds: "The publication of my autobiography before my death is owing to the fact that, against my wishes, these good friends would not wait for it but insisted on having it now. And so I have jotted down the record of my life, and it is given to you as I wrote it. You must not expect fine language nor eloquent periods, but only the honest record of the hardworking life of one who loves his country and his fellowmen, and who has tried to serve both."

#### Upson Nut Company Additions

The Upson Nut Company, Cleveland, Ohio, has just commenced the erection of two extensive additions to its plant. One of these will be a forge shop, 176 x 630 ft., to be operated in connection with its bolt and nut works. This building will be of steel construction. The other building will be a six story structure of reinforced concrete with floor space of 7500 ft. on each story. The first two floors will be used for storage purposes, the third for pattern storage and the three upper ones for offices. The building will be fitted with metal sash and will have a blower system for tempering the air and refrigerating machinery for a kitchen in connection with a dining room for employees. It will have both freight and passenger elevators. Plans for both buildings have been prepared by Anton Burchard, engineer, Cleveland, Ohio.

#### Steel Meeting at Pittsburgh October 25

The committee on arrangements for the Pittsburgh meeting of the American Iron and Steel Institute, consisting of James A. Farrell, chairman; E. A. S. Clarke, Charles M. Schwab, John A. Topping and F. S. Witherbee, has decided on Friday and Saturday, October 25 and 26, as the time of the meeting. The various features of the programme will probably be announced within the coming week.

# Room for More American Tools Abroad

## Observations in European Railroad Shops — General Machine Shop Practice Much Behind America

BY MAX H. C. BROMBACHER, NEW YORK

My recent six months' trip, during which I visited shops in England and in every country on the continent of Europe but Belgium, Holland, Italy and Russia, has satisfied me that there is room in every one of the countries I visited for more American tools. Though fully aware of the difference in first cost between tools made abroad and the same class of tools made here, still, the much greater output derivable from certain tools made here would much more than offset the difference in price.

Where it is not a case of demonstrably greater output of our tools compared with same class of tool made abroad, it is something else of great value; and the fact that this value is not generally realized abroad alters nothing. It may be said to reflect upon lack of adequate pushing of the tool abroad, or it may be said to reflect upon the method or lack of intelligent method pursued in pushing the tool abroad. But the fact of the existence of these values in our tools as compared with values existent in the same class of tools made abroad is not at all diminished by the fact that these values are not generally recognized and perhaps really unknown in Europe.

The object of my trip abroad was initially to visit the repair shops and depots of the railroads, not, initially at least, private shops. But as the majority of the railroads of Europe are state owned and managed, any opportunity for visiting private shops for building locomotives and repairing them afforded a basis for an interesting comparison of methods, equipment, etc., of which I was not slow to avail myself. Any remarks made herein are based upon what I saw in private shops for building and repairing locomotives in England and Germany, unless otherwise specified.

### Turning Off Locomotive Tires and Wheels

The first thing which attracted my attention in England was that notwithstanding a difference in the wage scale of anywhere from two to three times more here than there, still, in one important operation, that of turning off locomotive tires and wheels and car wheels, in some instances the price of turning off locomotive drivers over there was about three times the price for the same job here in well managed and equipped shops for wheels of about the same size. To be specific, it cost the shop I have in mind seven shillings and sixpence per pair, as against about two shillings and sixpence here. Translating our price into what it would be upon the basis of an even wage scale, it would mean that our price would be \$0.32 per pair here as against about \$1.88 per pair there. The difference arises from requiring from a day and a quarter and a day and a half to turn the pair of wheels off over there, as against our turning out from five to six pairs a day here, due to our superior tools and equipment.

When I pointed out this fearful difference in the cost of the same operation to the manager of the shop, notwithstanding the difference in wage scales, the manager gave the stock excuse prevalent over there of, "We do much smoother work than you do in your country." On being asked if the difference in smoothness, even if really existent, entailed more than another or finishing cut, and whether he was claiming that the finishing cut accounted for the difference in the cost of operation, he had nothing to say. Of course, a glance at the lathe and the cut, feed, etc., accounted very fully for the difference in the cost of the job. But the acme of astonishment was exhibited by the manager when I told him that my figures as to cost of operation were not based upon using "the very last word" in the way of lathes existent in this country. I referred to a particular make. He said he had never heard of the lathe I mentioned; that it had never been brought to his attention. I informed him that it was reputed to be able to turn out about twice the quantity of wheels per

day that the lathe upon which my figures were based was expected to turn out.

### An Archaic Forge Equipment

When I got into the forge shop in the same plant I found a hammer suspended by a rope from the trusses which was being pulled back by six men to give it impetus, while two more men guided it to the object to be struck. I do not mean to convey the idea that these men were using a bar of steel weighing half a ton or more as a ram to do some upsetting, owing to the fact that the object to be struck could not be reached in any other way; that might occur in any shop upon occasion. It appeared to be a regular hammer. It seems difficult to imagine anything in the way of equipment more antique or primitive than this; but it checked up with the ancient lathe all right. And it did not astonish me to be informed that the concern owning this shop had drawn down its surplus to the extent of £15,000 for the purpose of paying its previous year's dividend.

Obviously, the end of both surplus and of the company itself, with such equipment, is only a matter of time, since the reduction of the wage scale to a point low enough to offset the diminished output of antique equipment is a practical impossibility. Just as obviously one would think that any manager or director of a concern of this size would know this without being told. I accounted for it, in a way, along the lines indicated by this manager to the effect that he had never heard of a lathe that could do what I told him was good practice in the case of locomotive drivers, namely, five to six pairs per day of nine hours.

### A Strictly Modern English Shop

But the next locomotive shop I visited, a private shop, was a different proposition. It was also in England, but had a very modern equipment. The cuts, feed and smooth work delivered by the tools in this shop are about as good as anything I have ever seen here in this class of shop. In fact, I do not think I would be stretching the truth perceptibly were I to say that never had I seen as smooth work with such depth of cut and rapidity of feed in a locomotive shop in this country. And the manager had a totally different explanation for the existence of the ancient equipment described above; but I am anticipating. The manager of this shop was a really bright English engineer. Now, when a foreign engineer is really bright, especially an English one, he has considerable advantage over his American brother engineer. This is due to the fact that the foreign engineer is, as a rule, much more thorough than his American brother, and when to this thoroughness is added mental alertness, the foreign engineer, in my opinion, has better qualifications. But let the facts speak for themselves.

This manager had commenced the job of re-equipping his plant by purchasing, for instance, under strict guarantees, an American flat turret lathe, which was supposed to finish a stay-bolt every 20 minutes; then, by observing it, noticing where it seemed to be a bit lacking in respect of stiffness, etc., and, making slight changes, he got a stay-bolt in 17 minutes, plus a lot of experience. And so he went down the line until he knew just about what he wanted. He then had drawings made for the principal tools according to his own ideas of where the American tools could be improved, and had these tools made to his order by a large engineering works in England, whose specialty is not machine tools but ordnance.

Noticing the name of the maker upon so many tools in the shop, I was led to ask since when the gun manufacturer had branched out into the making of machine tools, and received a reply giving the information embodied above. My next question was, "But surely the gun concern is not allowed to sell duplicates of these tools to any com-



petitor without your consent, are they, since in that event you would have no protection?" The manager answered: "Yes; they can sell them to any one desiring to purchase, but we have the best kind of protection at that. When I tell you that lots of concerns using this kind of tools have had their engineers here to look them over, and when I tell you that despite the fact that these tools pleased the engineers as much as they have you the gun concern has yet to sell the first tool, I think you will not, in the light of what you have seen, contradict my opinion that English corporations seem to be unable to understand that it pays to buy modern tools, nor that this sort of ignorance is the very best kind of protection for us."

#### Visit to the London Polytechnic School and a Suggestion

A short time after this I had the opportunity of visiting the London Polytechnic School and of being escorted through the mechanical engineering department by Prof. John Spooner, who is the head of that department. I was much pleased indeed by what I saw. There is no doubt that this institution is doing very good work, and I hardly think that the late celebrated opponent of college education, Richard T. Crane, would be inclined to put the ban on this institution. It seems to be very thorough in its methods. That Professor Spooner's fame is not confined to "the tight little island" is indicated by the fact that his book on "Machine Design" is used in Columbia University of this city as a text book in the mechanical engineering course. The fame of the institution itself is indicated by the fact that the late P. D. Armour selected its head to lay out and start the work at his Armour Institute in Chicago. After being escorted through by Professor Spooner and expressing my appreciation of the very thorough way in which the work seemed to be conducted, he paid me the compliment of asking if there was any course I could suggest which, in my opinion, would be advantageous to England. Naturally, in the light of what I had seen, and the opinion expressed by the English engineer in reference to the seeming ignorance of average English corporation directors, I had but slight hesitation in answering in the affirmative the professor's question and saying that a course whose objective would be the educating of the average English corporation director to the fact that it paid to scrap antiquated equipment and replace it with up-to-date machinery was a course which would be very advantageous to England. This suggestion was reinforced or amplified by relating to the professor several instances coming under my observation, not omitting the two mentioned above.

#### Observations in Germany

I will refer here to my visits to two private locomotive shops in Germany and one in Switzerland. The two German shops were more modernly equipped than the Swiss shop. But the most interesting thing about the German shops was that one of them was practically completely equipped with American tools and that this was the result of the manager having made a thorough study of German and American machine tools, with the result that American tools received the preference. The point I would emphasize in this case is that the thorough investigation made by this director seems not to have been the result of his being approached by any salesman representing the different American tools he purchased; that is, the American tools were not pushed by the makers along the lines which finally resulted in their adoption by this locomotive building corporation. On the contrary, he went out and dug up the facts for himself and carried his investigation along lines which were new ones to the German manufacturers of similar lines of tools. In fact, when I acquainted users with some of the reasons which had led this director to finally decide in favor of American tools, despite the difference in price, they admitted frankly that his objections to the German tools were well founded and that his reasons for paying the difference in price were good ones.

Now, from the manufacturer's viewpoint, this way of having his goods introduced would be an ideal way, only one could hardly rely upon many being thus sold. But the fact that American tools got the preference and that they were purchased under this unusual method of the director digging out for himself, though a German and a born Prussian at that, indicates to me that there is room for more American tools abroad if presented along right lines, despite their higher initial cost. I am not referring in

this latter instance to wheel lathes, where the superiority of our tools is so easily demonstrable, nor to tools fully protected by patents, but to tools where the superiority consists in superiority of design.

It is needless to say that over there, as here, personal solicitation is much more effective than the sending of literature, except that over there literature is apt to receive more careful attention than it generally receives here unless reinforced by personal solicitation. The problem of reaching those who have the final decision over there in such matters, as, for instance, in railroads, the chief superintendent of motive power, is very much greater than here. Those who have something to sell are not permitted to take up the time of this functionary over there, as is so generally the case here. He passes upon the merits of any tool which it is purposed to install; but the merits of the various tools are generally submitted to him by his subordinates in charge of the various shops under his jurisdiction, and especially is this the case in regard to a new tool which the subordinate has heard of.

## American Institute of Mining Engineers

### October Meeting in Cleveland, Ohio

The American Institute of Mining Engineers will hold its fall meeting in Cleveland, Ohio, some time in October. At this meeting the new iron and steel division of the Institute will have a most attractive programme, as shown by the following list of papers already announced:

"Notes on Ruff's Carbon-Iron Equilibrium Diagram," by Henry M. Howe, New York.

"The Case-Hardening of Special Steels," by Albert Sauveur and G. A. Reinhardt, Cambridge, Mass.

"The Heat Treatment of Special Steel," papers by Henry M. Howe, New York, and R. R. Abbott and Mark Ammon, Cleveland.

"The Effect of Alumina in Blast Furnace Slags," by J. E. Johnson, Jr., Ashland, Wis.

"Blowing In of Blast Furnaces," by Ralph H. Sweetser, Columbus, Ohio.

"Blast Furnace Air Pressures," by J. E. Johnson, Jr., Ashland, Wis.

"The Utility of Efficiency Records in the Manufacture of Iron," by John J. Porter, Staunton, Va.

"A Novelty in Open-Hearth Steel Furnace Practice," by N. E. MacCallum, Phoenixville, Pa.

"Notes on Titanium and on the Cleansing Effect of Titanium on Cast Iron," by Bradley Stoughton, New York.

"Cuyuna Iron Ore Range," by Walter A. Barrows, Jr., Duluth, Minn., and Carl Zapffe, Brainerd, Minn.

"Method of Surveying and Sampling Diamond Drill Holes," by E. E. White, Glen White, W. Va.

"The Concentration of Iron Ores," by N. V. Hansell, New York.

"Iron Ore," by Dwight E. Woodbridge, Duluth, Minn.

"The Concentrating and Briquetting Plant of the Moose Mountain, Ltd.," by Chas. E. Hermann, New York.

"The Use of Schumacher Briquettes in the Johnstown Blast Furnaces," by Joseph W. Richards, South Bethlehem, Pa.

"Rational Cupola Practice," by Richard Moldenke, Watchung, N. J.

"The Manufacture of Coke," papers by F. E. Lucas, Sydney, C. B.; W. H. Blauvelt, Syracuse, N. Y., and C. W. Andrews, Duluth, Minn.

"The Heat Treatment of Steel Castings," by C. D. Young, Rolla, Mo.

"Notes on the Structure of Steel," by William Campbell, New York.

At a recent meeting of the Council of the Institute the president announced the following nominating committee which will present names for officers to be voted upon at the annual meeting February 18, 1913: Philip N. Moore, St. Louis, chairman; John Birkinbine, Philadelphia; David W. Brunton, Denver, Colo.; Seeley W. Mudd, Los Angeles; Charles P. Perin, and Arthur L. Walker, New York.

## Locomotive and Car Orders for Seven Months

The compilation of locomotive and car orders made by the Railway Age Gazette, shows that in the first seven months of this year orders were given for 2246 locomotives, 81,942 freight cars and 1516 passenger cars. The statistics are for the United States and Canada. The number of cars and locomotives not publicly reported cannot be accurately arrived at, but it would probably be safe to add 10,000 to 12,000 to the number of car orders as above indicated, making the total number placed this year up to July 31 roundly 95,000.

## Judicial Decisions of Interest to Manufacturers

ABSTRACTED BY A. L. H. STREET

**RIGHT OF SELLER TO RETAKE GOODS FOR NON-PAYMENT.**—When a seller of goods does not reserve title until payment of the price, fraud or misrepresentation by the buyer in obtaining credit must be shown by the seller before he can retake the property for non-payment of a deferred instalment of the price. (Arkansas Supreme Court, Colvin vs. Southern Lumber Company, 148 Southwestern Reporter 496.)

**DAMAGES RECOVERABLE ON BREACH OF WARRANTY OF MACHINERY.**—In measuring the damages of a buyer of machinery, arising from a breach of warranty of its efficiency, he is not entitled to an award for loss of profits on articles which he might have manufactured with the machinery contracted for, where he had no orders or contracts for a sale of such articles. (New York Supreme Court, Appellate Term, Schug vs. Wagner, 135 New York Supplement 1078.) A buyer's remedy, on breach of warranty of the thing bought, is the difference between its actual and its warranted value, unaffected by the value of substitute purchased. (South Dakota Supreme Court, Mair vs. Williams, 136 Northwestern Reporter 1086.)

**DUTY TO SAFEGUARD TRAVELING CRANES.**—The Iowa statute which requires "machinery" in factories to be guarded extends to traveling cranes, so far as injury to an employee can reasonably be apprehended. (Iowa Supreme Court, McCarnly vs. Bettendorf Axle Company, 136 Northwestern Reporter 920.)

**RESPONSIBILITY FOR OMISSION TO GUARD MACHINERY.**—An employer cannot escape responsibility for injury to a workman caused by the former's failure to guard dangerous machinery by showing that he directed other employees to cover the dangerous place. (Minnesota Supreme Court, Falconer vs. Sherwood, 136 Northwestern Reporter 1039.)

**RESPONSIBILITY FOR NEGLIGENCE OF TRUCKING COMPANY'S TEAMSTER.**—A manufacturer is not liable for injury to a third person caused by negligence of a teamster employed by a trucking company which contracted to deliver freight to a vessel. (United States Circuit Court of Appeals, First Circuit, Bellatty vs. Barrett Mfg. Company, 196 Federal Reporter 493.)

**EMPLOYER'S RESPONSIBILITY FOR EMPLOYEE'S OMISSION OF DUTY.**—Failure of one employee to warn another of a danger, as directed by the employer, is chargeable to the employer, entitling the second employee to recover for injury resulting from omission to give the warning. (Minnesota Supreme Court, Wickstrom vs. Whitney, 136 Northwestern Reporter 1099.)

**VALIDITY OF EXCLUSIVE SALES CONTRACT.**—A merchant's contract not to handle articles of a certain kind for a fixed period, other than those produced by a particular manufacturer, a price for the goods to be delivered being agreed upon, is valid, and enforceable by enjoining the merchant from handling rival product during that term. (Michigan Supreme Court, Peerless Pattern Company vs. Gauntlett Dry Goods Company, 136 Northwestern Reporter 1113.)

**DAMAGES RECOVERABLE IN BANKRUPTCY FOR BREACH OF CONTRACT.**—In a bankruptcy proceeding, the damages provable against the estate on account of the breach of the bankrupt's contract to buy articles manufactured for him is the difference between the contract price and the cost of production, without any deduction on account of the sale of the articles to a third party, if the articles had a market value. (United States Circuit Court of Appeals, First Circuit, Pratt vs. Auto Spring Repairer Company, 196 Federal Reporter 495.)

**RIGHTS OF BUYER BY SAMPLE.**—A buyer of goods sold by sample does not waive breach of the warranty of quality by accepting or paying for the goods. (New York Supreme Court, Appellate Term, Rosen vs. F. W. Woolworth Company, 136 New York Supplement 1.)

**CARRIER'S RESPONSIBILITY FOR WRONGFUL DELIVERY OF FREIGHT.**—A carrier's liability to a shipper of freight to the latter's order for delivering the shipment to the purchaser without surrender of the bill of lading or payment of the draft on the purchaser attached thereto does not depend upon the shipper first attempting to recover the freight from the purchaser. (Tennessee Supreme Court, Louisville & Nashville Railroad Company vs. United States Fidelity & Guaranty Company, 148 Southwestern Reporter 671.)

**BREACH OF WARRANTY OF VENTILATING APPARATUS.**—The measure of damages recoverable for breach of warranty of the efficiency of ventilating apparatus installed in a building is the difference between the actual value of the apparatus and its value as warranted. (New York

Supreme Court, Appellate Term, L. J. Wing Mfg. Company vs. Dairymen's Mfg. Company, 136 New York Supplement 66.)

**PROOF REQUIRED IN SUIT FOR FAILURE TO DELIVER.**—One who sues for failure to deliver an article bought by him must show his readiness to pay the agreed price. (New York Supreme Court, Appellate Term, Reid vs. America Company, 136 New York Supplement 75.)

**VALIDITY OF FOREIGN CORPORATION'S CONTRACTS IN VERMONT.**—By failing to comply with the Vermont law which prescribes the terms on which a foreign corporation may lawfully do business in the State, such a corporation does not lose the right to sue or defend on rights acquired under an executed contract. (Vermont Supreme Court, Roberts vs. W. H. Hughes Company, 83 Atlantic Reporter 807.)

**VALIDITY OF CONTRACT TO PROCURE REFUND ON CUSTOMS DUTIES.**—An agreement by custom house brokers with a smelting company to procure, at their own expense, for 50 per cent. of the amount collected, the refunding of excess duties exacted by revenue officers on importations of ore, is valid and enforceable; and the brokers are entitled to be paid their portion of a sum refunded by the Government through their efforts under the contract out of a treasury warrant for such sum issued to the smelting company and delivered to its receiver, although, under the circumstances, the ores were in fact owned and the duties paid by another corporation. (Kansas Supreme Court, F. B. Vandegrift & Co. vs. Lanyon Zinc Company, 124 Pacific Reporter 534.)

**RESPONSIBILITY FOR INJURY TO LATHE OPERATOR.**—A lathe operator can recover for injury caused by a file being thrown into his eye, as a result of a defect in a plate on the machine and the employer's omission to provide a guard on the lathe and a handle for the file. (Indiana Appellate Court, Koehler vs. Harmon, 98 Northeastern Reporter 1009.)

**INJURY CAUSED BY EXPLOSION OF FOUNDRY CORE.**—A foundry company is liable for injury to a workman through explosion of an imperfect core made by a fellow employee. (North Carolina Supreme Court, Alley vs. Charlotte Pipe & Foundry Company, 74 Southeastern Reporter 885.)

**RIGHT TO ENJOIN USE OF TRADE NAME.**—On the ground of unfair competition, one may be enjoined from adopting a trade name so similar to that of a competitor as to produce confusion in the public mind as to the identity of the two concerns, even though the injured competitor's trade name is not one legally subject to exclusive appropriation as a trade name. (New York Supreme Court, Monroe County, Elbs vs. Rochester Egg Carrier Company, 134 New York Supplement 979.)

**PROOF REQUIRED IN PATENT INFRINGEMENT CASES.**—A patentee, in suing a user of a device for infringement, need not prove that defendant would have bought a device made under the patent, if he had not bought the infringing device; that fact being presumed. (United States Circuit Court of Appeals, Second Circuit, Transit Development Company vs. Cheatham Electric Switching Device Company, 194 Federal Reporter 963.)

**DAMAGES RECOVERABLE BY WIDOW.**—The amount which a workman's widow is entitled to recover on account of his death, if caused by negligence attributed to his employer, is limited by the value of the support and protection he would probably have afforded her during the remainder of his natural life, plus any amount she might reasonably have expected to receive at his death had he lived out the term of his life expectancy. (Wisconsin Supreme Court, West vs. Bayfield Mill Company, 135 Northwestern Reporter 478.)

**RESPONSIBILITY FOR DEFECTS IN FREIGHT CARS.**—To charge an employer for injury caused by a defective brake or other appliance on a freight car furnished by a railroad company, the defect must have been obvious or discoverable on such inspection as a reasonably prudent person would have made in the same circumstances. (Wisconsin Supreme Court, Gager vs. Stolle-Barndt Lumber Company, 135 Northwestern Reporter 490.)

**CONTRIBUTORY NEGLIGENCE IN PERSONAL INJURIES.**—Where injury results to a workman through his employer's breach of statutory duty to guard dangerous machinery, contributory negligence but not assumption of risk is available as a defense. An oiler of machinery is not necessarily negligent in doing his work while the machinery is in motion if he is so directed by his foreman. (Iowa Supreme Court, Verlin vs. United States Gypsum Company, 135 Northwestern Reporter 402.)

**ACCIDENTAL INJURY TO CUSTOMER.**—A customer injured while lawfully on the premises of a business concern can recover for injury resulting from the latter's breach of duty to keep the premises in reasonably safe condition. (Florida Supreme Court, J. G. Christopher Company vs. Russell, 58 Southern Reporter 45.)



# The Machinery Markets

The consensus of machinery trade reports is that the prospects for fall activity are most excellent. As previously stated, the summer has been satisfactory, but it is to the cooler months that the trade is now looking and doing so with no small degree of confidence. The last week has seen a little tardiness here and there in closing transactions, which has caused the total volume of trade for the month to fall somewhat below expectations, but from no direction comes any real complaint. In New York a good steady demand, but one without special feature, has been experienced. Railroad business has been rather slow in closing in Chicago, but the trade there has received two additional and extensive lists from prominent railroads. The machine tool trade in Cleveland is active, largely as a result of tardy additions to manufacturing equipment. In Cincinnati, where there also is considerable unclosed business, the week brought a lull in both domestic and foreign inquiry, but all the indications are for an active period in the closing months of the year; excellent railroad buying having been already felt, together with a good demand for electrical apparatus. New England advices reiterate that the summer has been prosperous and the fall outlook inspires satisfaction. Trade has been fair in Philadelphia and still better is anticipated. In Detroit, where manufacturers are making few extensions, current orders for machine tools for replacement purposes have increased. The month's business in St. Louis will run into excellent figures. Power machinery has been in special demand in the Central South. Birmingham reports an increasingly brisk demand for general machinery. Texas is looking forward to new manufacturing plants and railroad construction, while the call for irrigation machinery continues good.

## New York

NEW YORK, August 28, 1912.

In the New York machinery market the week just past brought few changes and conditions continued to be satisfactory, considering that the closing days of the summer included some warm weather that was more uncomfortable than that of earlier in the season. In the immediate vicinity of New York trade has been rather quiet. Optimism and a general disregard of political charges and counter charges, together with a fair volume of transactions, have been the keynotes of the situation. Those houses whose lines are varied and those whose territory is most inclusive were naturally the most pronounced in their expressions of satisfaction, and none whatever gave voice to complaint. In some cases it is admitted that even more business might have been done had it not been for extreme cautiousness in stocking up earlier in the year. There is now a good steady demand for small lots of both new and second-hand machinery. Demand from the railroads has been small in New York, yet they have figured to some extent. It is reported that the Pennsylvania Railroad, which already has purchased some tools of recent date for its Altoona shops and is reported to have a large list out in the West, will soon be in the market for a general list of tools for Altoona. Through Phelps, Dodge & Co.'s purchasing department, 99 John street, New York, inquiries are being made for a small list of tools, including an air compressor, radial drill, lathes and other machines for the El Paso & South Western Railroad. The anticipated Baltimore & Ohio list has not yet appeared and New York houses have not as yet received any orders against the small list of the Norfolk & Western Railroad.

The Department of Public Charities, New York, is advertising for bids to be submitted on or before September 4 for furnishing labor and materials required for the installation and erection of two high pressure boilers and other apparatus for the heating plant and power house of the Metropolitan Hospital on Blackwell's Island. The security required is \$8,000 and the work must be performed within 60 consecutive days. Other information may be had at the office of Frank Sutton, consulting engineer, 80 Broadway.

The Fairmount Box Company, Canajoharie, N. Y., recently mentioned as having been incorporated, is having plans prepared for a factory 100 x 180 ft., two stories and basement, which it plans to erect some time in the spring of 1913. The company is now operating an existing plant, a part of the Beechnut Packing Company, and has considerable machinery at hand which it will doubtless supplement. The product of the company is corrugated paper boxes.

The Ingersoll-Rand Company, Painted Post, N. Y., has let the contract for a machine shop, 140 x 288 ft., one story, steel-frame construction, to be added to the plant.

The Defender Photo Supply Company, Rochester, N. Y., has had plans prepared for a boiler house and power plant which it will add to its manufacturing plant on Driving Park avenue.

The Harris Piano Player Company has been incorporated at Binghamton, N. Y., by K. B. Harris,

E. S. Coleman of Binghamton, and H. C. Haggerty of Endicott, N. Y., to engage in the manufacture of musical instruments, and a factory will be equipped for the purpose. The capital stock of the company is \$75,000.

The Corinna Mfg. Company, Corinna, N. Y., has completed plans for a two-story woolen mill which it will erect at once.

The Collar City Finishing Company, Troy, N. Y., has been incorporated with a capital stock of \$100,000, to manufacture textiles, and the arrangements for a plant are being consummated. The incorporators are Johannes M. Schaller, Charles H. and Frederick W. Cavanagh of Waterford, N. Y., and Geo. W. Cavanagh of Cohoes, N. Y.

The General Electric Company, Schenectady, N. Y., has had plans prepared for an additional factory building, to be erected at once.

The Newburgh Bleachery, Newburgh, N. Y., has awarded contracts for three new buildings, which it will add to its plant.

Addison B. Colvin, Glens Falls, N. Y., will erect a factory building on Glen street, to be occupied when completed by the Clark Textile Company of Saratoga.

The Price Fireproofing Company, Poughkeepsie, N. Y., has let contract for a one-story and basement factory building, 42 x 237 ft., which it will equip for the manufacture of its product.

Incorporation papers have been filed at Rochester by the Maximus Brethren, Inc., capitalized at \$100,000, who will establish a plant for the manufacture of liquid and prepared foods. F. J. O'Brien, F. C. Armbruster and G. Spiegel are the incorporators.

M. L. Oberdorfer, Syracuse, N. Y., has taken bids for and will soon start construction work on a one-story and basement foundry building, 48 x 76 ft., which he will erect on East Water street.

The Peterson National Company, Buffalo, has been incorporated by J. A. Drake of Corning, N. Y., and Henry Adsit Bull and Frederick C. Slee, Buffalo, with a capital stock of \$200,000, and will build and equip a plant for the manufacture of core oil, etc.

The Symonds Automatic Water Wheel Company, Buffalo, has been incorporated for the purpose of manufacturing special patented machinery, turbines, etc. The capital stock is \$100,000. Directors are T. and D. B. Symonds and A. W. C. May.

The Owego Bridge Company, Owego, N. Y., has received the contract from John A. Bensel, state engineer, Albany, for the construction of the Alleghany Indian reservation bridge at Salamanca, N. Y., to be of steel, 408 ft. in length.

The Board of Public Works, Clinton, N. Y., has let a contract to J. Wm. Dawes of that place for the construction of a sewer system for the Hamilton College district, including a disposal plant, for which plans have been completed by A. M. Scripture, Hartford, N. Y.

The Louismann-Capen Company, Brockport, N. Y., has been incorporated with a capital stock of \$300,000 by G. C. Gordon and G. P. Phelps of Brockport, and Louis S. Kurtzmann of Buffalo, and will take over

and continue the operation of the plant of the Brockport Piano Company. Enlargements will be made later to the plant and equipment.

John A. Bense, Albany, N. Y., state engineer, has completed plans for the Erie Barge Canal through Seneca Falls, including a tandem lock at "long bridge." This will give a water fall of over 50 ft. at this point. The level of Cayuga Lake will be brought up to the two locks and a large amount of water power will be available from the overflow when the Seneca River is converted into the enlarged waterway.

A certificate of incorporation has been filed by the Syracuse Crucible Steel Company, Syracuse, N. Y., with a capital stock of \$10,000. Lewis P. Smith is president of the company.

## New England

BOSTON, MASS., August 27, 1912.

The summer has been prosperous beyond the anticipation of manufacturers and dealers in machinery and supplies, and if the autumn's business equals it, with the inevitable seasonable improvement, conditions will be entirely satisfactory. The outlook is that improvement will be even more rapid than this. Labor conditions in New England are satisfactory so far as trouble between employers and employees is concerned, the only disagreement reported in metal lines being an abortive strike of molders in certain Holyoke foundries. Labor is scarce and the natural effect on wage figures is being felt.

The Whitney Mfg. Company, Hartford, Conn., manufacturer of machinery, chains and other specialties, will build an addition to its works, increasing manufacturing capacity in a large way. The building will be of steel and concrete construction, following the handsome architectural scheme of the present main building. It will be 50 x 180 ft., two stories, with construction designed to take additional floors later.

The Hartford Metal Treating Company, Hartford, Conn., has been incorporated with Charles W. Olsen as president; Wilson L. Fenn, vice-president; John D. Cutter, Jr., secretary, and Reynolds C. Baldwin, treasurer, the directorate consisting of these officers and Raymond S. Clark, all of Hartford. The company is in the business of heat treating steel, and is equipped to do all kinds of hardening, annealing and carbonizing, high speed steel hardening being a specialty, with the use of the Hoskins electric hardening furnace.

The new factory building of Manning, Bowman & Co., Meriden, Conn., will be used for the manufacture of metal goods, nickel-plated ware, etc., and will give additional capacity made necessary by increasing business. It will be an extension of a building completed in 1907, and will be 40 x 120 ft., five stories, of brick.

The Stanley Works, New Britain, Conn., manufacturer of builders' hardware, will add a story to a building 40 x 130 ft.

Announcement is made at Bridgeport, Conn., that the Connecticut Electrical Mfg. Company, Bantam, Conn., will remove its business to that city and will erect a four-story brick factory at Connecticut avenue and Florence street to cost \$70,000.

The Electric Cable Company, Bridgeport, Conn., is making plans for a large addition to its plant.

The North & Judd Mfg. Company, New Britain, Conn., manufacturer of saddlery hardware, has increased its capital stock from \$500,000 to \$1,000,000, of which \$400,000 was distributed to present stockholders from the accumulated surplus and \$100,000 was issued for new construction, betterments and improvements, having in view the most modern facilities for handling increased business.

The C. F. Church Mfg. Company, Holyoke, Mass., manufacturer of plumbing fixtures, suffered only from water in the recent fire in the same building, the blaze being in the works of the Wagner Spring Bed Company.

The Champion Horse Shoe Company, Pawtucket, R. I., is now manufacturing goods and will soon be in the market. The company is occupying what was recently the plant of the Pawtucket Foundry Company, and is employing 150 hands. Edwin A. Smith is president, George L. Bowen vice president and general manager, Donald E. Jackson secretary and treasurer and George L. Markley assistant general manager.

The Hoggson & Pettis Mfg. Company, New Haven, Conn., manufacturer of chucks, etc., has not decided when it will begin the erection of its new factory building. The structure will be 50 x 145 ft.

The Greenfield Tap & Die Company, Greenfield, Mass., has placed the entire contract for the erection of four reinforced concrete machine shops with the Aberthaw Construction Company, Boston.

## Philadelphia

PHILADELPHIA, PA., August 27, 1912.

Few new inquiries of importance have developed. Dealers report a fair volume of business, considering the vacation season, and expect that a great deal more activity will be shown in the early fall months. Machine tool builders are receiving a very good volume of business, usually from widely scattered buyers, and plant activities are gradually growing better. Industrial plants using metal working machinery are operating at capacity in this territory, but have not been very general buyers of machine tool equipment. The major portion of the business recently closed is confined to the smaller tools. Buying by the local railroads is unimportant, occasional odd tools comprising the general run of business. The Virginian Railway has, it is stated, divided its machine tool list among a number of makers and merchants, while the Norfolk & Western has not yet placed orders against its recent small inquiry. Crane builders report new inquiries as quiet, although some moderate orders are being figured on. Makers of power transmission specialties having an established trade abroad note an improvement in the volume of orders coming in. A very satisfactory business is moving in boilers, although the engine trade remains rather quiet. The demand for second hand machinery and tools continues fair. Unchanged conditions are reported in the foundry trade. Gray iron foundries are gradually becoming busier, while steel casting plants are operating at practically full capacity.

Proposals are being taken by the Estate of Dennis Conway for the erection of a two-story garage, 82 x 90 feet, to be built at 1424 to 1430 Vine street in the automobile district in this city.

The plant of the Primos Chemical Company, Primos, Pa., was badly damaged by fire August 20, necessitating the installation of new equipment. Deliveries will be interrupted on but one line of the company's product. The vanadium department was unharmed and continues in operation. The burned portion of the plant will be rebuilt and re-equipped as rapidly as possible.

The Stead-Miller Company, Bodine and Huntingdon streets, has awarded contracts for the erection of a four-story addition, 22 x 85 ft., to its present factory, which will be used largely for dyeing purposes. Special machinery, dryers, etc., in connection with that industry will be installed.

George D. Porter, director of public safety, will receive proposals until September 5 for the installation of new elevators and repairs to present elevators in the City Hall. Bids will also be taken for alterations and additions to the steam piping system. Specifications may be obtained on application to the Electrical Bureau, room 618, City Hall.

The merging of six electric companies in the northern and central parts of the State into the Central Pennsylvania Electric Company of Lock Haven, Pa., is announced. The companies merged are the West Branch Light, Heat & Power Company, Williamsport; Susquehanna Light, Heat & Power Company, Jersey Shore; Logan Electric Company, Bellefonte; Avis Heat, Light & Power Company, Avis, and the Patterson-Scoutac & Clinton Light, Heat & Power Companies, Lock Haven.

Application has been made in the Lehigh County Court, it is stated, by minority holders in the Davies & Thomas Company, iron founder and machinist, Catasauqua, Pa., for a receivership for the corporation, which has a capital of \$300,000.

F. W. Van Loon has been awarded a contract to erect a generator and power plant building for Henry Disston & Sons, Inc., at Tacony. The building will be 50 x 110 ft., two stories.

Announcement is made of the incorporation in Delaware of the Salisbury Ball Bearing Company with a capital stock of \$100,000. H. Ralph Ewart, Wilmington, is named as being interested in the company.

The American Pulley Company, Twenty-ninth and Bristol streets, Philadelphia, is planning the erection of a concrete warehouse, 100 x 180 ft., with a wing, 50 x 80 ft. The area now occupied for storage and shipping will then be added to the manufacturing department of the plant, materially increasing its capacity. The company reports business in very satisfactory condition, the export demand particularly showing a good increase.



## Chicago

CHICAGO, ILL., August 27, 1912.

While a generous inquiry for machine tools is current in this market, a tardiness in closing some of the larger railroad lists has reduced the amount of business actually placed during the month below what was anticipated. The addition of a large list from the Chicago, Milwaukee & St. Paul Railway and another from the Chicago & Alton, both of which are given herewith, has added materially to the strength of the situation. An inquiry from a Columbus, Ohio, manufacturer asking for prices on machines which will aggregate in value \$40,000 to \$50,000, is an important feature of the past week's activity.

The following are machines for which prices are asked by the Chicago & Alton and the Chicago, Milwaukee & St. Paul:

## Chicago &amp; Alton

- Two 24-in. x 6-ft. lathes, motor driven.
- One 4-ft. radial drill, belt driven.
- One 24-in. back geared crank driven shaper.
- One 30-ton forcing presses.
- Two 12-in. x 7 1/2-in. x 11-in. double cylinder pumps.
- One 42-in. car wheel lathe, motor driven.
- One 26-in. draw cut shaper.
- One 2000-lb. single frame steam hammer.
- One vertical high-speed punch 36-in. throat, motor driven.
- One vertical shear, 36-in. throat, motor driven.
- One 3-in. x 36-in. flat turret lathe, motor driven.
- One 2-in. triple head, bolt cutter.
- One 42-in. boring mill, motor driven.
- One 16-in. sensitive drill, bolt driven.

## Chicago, Milwaukee &amp; St. Paul

- Three 36-in. x 36-in. x 10-ft. planers.
- Four 24-in. x 24-in. x 6-ft. planers.
- Three 27-in. x 10-ft. lathes.
- Three No. 4 double axle lathes.
- Three 20-in. x 10-ft. lathes.
- Three 18-in. x 6-ft. brass lathes.
- Three 3-in. x 36-in. turret lathes.
- Six 12-in. x 6-ft. lathes.
- Six 16-in. x 6-ft. lathes.
- One 42-in. steel tire lathe.
- Three 400-ton driving wheel presses.
- One 18-in. double traveling head shaper.
- Three horizontal boring mills.
- Three 42-in. boring mills.
- Three 18-in. x 6-ft. millers.
- Three No. 2 car wheel borers.
- Three 36-in. drill presses.
- Three 24-in. drill presses.
- Three 13-in. friction drills.
- Three 24-in. slotters.
- Two 36-in. wet grinders.
- Three universal grinder pins.
- Three universal tool grinders, double-wheeled.
- Five 1 1/2-in. bolt cutters.
- Three pipe threading nipple machines, 1-in. to 6-in.
- Three bevel shears.
- Three 24-in. drill presses.
- Three flue welders.
- Three flue furnaces.
- Three annealing furnaces.
- One 3000-lb. steam hammer.
- Three 100-lb. power hammers.
- One No. 9 bulldozer.
- Three 2-in. bolt headers.
- Three No. 9 blower fans, motor driven.
- Two 48-in. band saws.
- One 14-ft. bending roll.
- One 18-in. x 6-ft. lathe.
- One 9-in. driving wheel lathe.
- One stay bolt cutter.
- One 34-in. drill press.

The Ardmore Interurban Railway Company, Ardmore, Okla., has been incorporated with a capital of \$300,000, to build an electric line west from that city. John S. Owens is president and E. E. Allen, vice-president.

The Marquette Cement Mfg. Company, La Salle, Ill., contemplates the expenditure of \$180,000 for additional machinery in anticipation of a much heavier demand upon its producing capacity.

The Fulton Sash Mfg. Company, Chicago, has acquired a tract of 5 acres of land on South Fifty-second avenue, on which it is understood that the company will erect a large factory.

The Davenport Foundry & Machine Company, Davenport, Iowa, has let the contract for an addition to its present foundry located on West Fourth street, to the Tri-City Construction Company. Work will begin immediately.

Harvey Chalmers & Son, Amsterdam, N. Y., are planning the erection of a factory at Cairo, Ill., for the manufacture of pearl buttons. It is estimated that an acre of ground will be required for the building, which is to accommodate 100 machines.

The Chicago, Milwaukee & St. Paul Railroad has commenced work on the construction of a 26-stall roundhouse at Perry, Iowa.

The Waterloo Gasoline Engine Company, Waterloo, Iowa, has practically completed arrangements for obtaining a site for its new plant and the proposed

plan of erecting an isolated foundry will no longer be necessary.

The Baker Mfg. Company, which recently moved its plant from Plano, Ill., to Springfield, is about to erect an addition, 40 x 60 ft., which is to be occupied by its welding department.

Hoklas & Son, Peoria, Ill., will erect a brick factory at 302 First avenue, to cost \$10,000.

The Universal Wheel Company, Chicago, is considering the location of a factory at Morris, Ill.

Architects Hatzfeld & Knox, Chicago, have been awarded the contract for a three-story factory building 50 x 50 ft., of mill construction, for the S. Pooley Company, 1407 Hudson avenue, Chicago.

The Oxweld Acetylene Company, Chicago, will build an addition to its plant, 50 x 75 ft., at an estimated cost of \$10,000, this addition to be occupied by the welding department. The architect is R. S. Lindstrom.

The Morrisfield Pipe Line & Fuel Supply Company, Muskogee, Okla., has been incorporated with a capital stock of \$25,000. Incorporators are J. R. Harris, Geo. W. Carroll, W. T. Amis, W. C. Franklin, W. P. Amis and P. J. Carey.

The Union Car & Equipment Company, Chicago, has been organized with a capital stock of \$250,000 for the manufacture of railroad equipment. Incorporators are W. G. Davis, A. L. Jacobs and Rosemary Davis.

The Radiant Mfg. Company, Chicago, recently organized with a capital of \$1,500, will manufacture and deal in heat and lighting machinery. Incorporators are F. B. Campbell, J. H. Nickelson and E. L. Wiggins.

The Big Four Railroad plans the erection of a \$20,000 roundhouse at Cairo, Ill., work on which is to begin immediately.

The Wilson-Bennett Mfg. Company, manufacturer of oil tanks, has purchased four acres of ground on Fifty-eighth avenue, Chicago, on which the company plans to erect a two-story brick factory building, to cost \$40,000.

The International Harvester Company is taking figures covering the erection of a seven-story warehouse, the estimated cost of which will be \$350,000. Tenders should be addressed to W. D. Price, 606 South Michigan avenue.

The Watewitz Machine Company, Racine, Wis., recently mentioned as having been incorporated, is having plans prepared for the erection of an experimental machine shop. The company will manufacture locks, bundling machines, mechanical automobile starters, etc.

The city of Cayuna, Minn., will open bids August 31 for the construction of a waterworks complete. G. Anderson is city clerk.

The city of Eugene, Ore., will open bids September 9 for the construction of a sewerage system. R. S. Bryson is city recorder.

## Detroit

DETROIT, MICH., August 27, 1912.

Business conditions are somewhat more favorable and while August totals will probably fall below those of July, this was not unlooked for and dealers are not inclined to complain. Current orders are not large, but include a greater number of standard metal-working tools than for the past few weeks. From information available from machinery merchants, a large part of this business is for replacement purposes. A local maker of automobile accessories has purchased a few tools and the sheet-metal stamping companies have also been small purchasers, but very few companies are extending their mechanical equipment at present and there is also a dearth of new enterprises requiring equipment. Business from the state continues to show a better proportionate volume than in Detroit. Steel casting plants are well engaged and gray-iron foundries are generally operating on a somewhat better basis. Second-hand machinery is moving more freely and inquiry for this class of equipment is also improved.

The Standard Brass Works is erecting a new plant on Wight street, consisting of a building 55 x 117 ft., two stories, of mill construction; a foundry 52 x 100 ft., a boiler and engine house 25 x 35 ft., and a storage shed 15 x 60 ft. A power boiler will be installed, also an electric power elevator. Fred G. Austin is president of the company. William A. Moran, vice-president and treasurer, and Herbert P. Brownell, secretary.

The Jeffrey DeWitt Company, manufacturer of spark plugs, is enlarging its plant at Butler avenue and Grand Trunk Railroad, by the construction of an addition 64 x 100 ft., three stories, and 52 x 100 ft., one story. This will enable the company to treble its output. The present factory building will be turned into a pottery and the mechanical work will be done in the new buildings.

The Standard Motor Truck Company has been incorporated with \$50,000 capital stock. Howard Wilcox and W. K. Ackerman are the principal stockholders. A factory 25 x 140 ft. has been secured at 973 Bellevue avenue.

The Packard Motor Car Company, Detroit, is erecting a new factory building to be used as an addition to its drop-forge department.

The Detroit Sulphite Pulp & Paper Company, Detroit, has awarded a contract for the erection of a new power building. The boilers to be installed have already been contracted for.

A five-story addition is being made to the plant of the Wilson Body Company, Detroit. The new structure will contain 65,000 sq. ft. when completed.

The Cadillac Motor Car Company has purchased property on West Fort street, with 100 ft. frontage and 30 ft. depth, for a large addition to its body-building plant.

The Havers Motor Car Company, Port Huron, Mich., has purchased the Studebaker plant in that city and will greatly increase its output.

The Board of Control of Jackson Prison is considering the installation of a brickyard plant at the prison. Bids are being received.

The plant of the Michigan Packing Company, Florence and Wheeler streets, Saginaw, Mich., has been shut down to permit the installation of new machinery. Work has been commenced on a big addition to the factory which will treble its capacity.

The village of Almont, Mich., is considering the installation of a waterworks system.

The Lee & Porter Mfg. Company, Buchanan, Mich., is contemplating adding the manufacture of automobile bodies to its present product. The automobile axle department of this concern will not be moved to Kalamazoo as was at first anticipated.

A company known as the National Compression Mixer & Primer Company has been organized at Battle Creek, Mich., to manufacture a device for eliminating the waste gasoline in automobile engines. E. W. Doty is among those interested.

D. F. Poyer & Co., Menominee, Mich., have purchased the Andrew Gram property, consisting of a three-story and basement brick factory building and two warehouses, representing an investment of \$100,000. The company manufactures motor-trucks.

A movement is on foot to raise the necessary capital to reopen the plant of the Northern Michigan Brick & Tile Company, located near St. Ignace, which has been closed for some time.

The taxpayers of Harbor Beach, Mich., have voted to bond for \$1,500 for waterworks extensions.

The Opportunity Mfg. Company, Saginaw, Mich., manufacturer of mission furniture, has added the manufacture of hardwood caskets.

The plant of the Oakland Motor Car Company, Pontiac, Mich., a subsidiary of the General Motors Company, will be enlarged, 300,000 sq. ft. of space being added.

A contract has been closed by the Michigan Central Railroad with George B. Swift & Co., builders, Chicago, for a new roundhouse at Bay City, Mich., costing in the neighborhood of \$200,000.

The Crawford Chair Company, Grand Ledge, Mich., has been reorganized with George Hefferan and F. A. Gorham, of the Michigan Trust Company, Grand Rapids, Mich., as president and vice-president, respectively. J. Harry Schoenberger will continue as secretary and treasurer, and will be the active manager of the business.

The Benzie Power Company, Frankfort, Mich., has applied for incorporation, with a capital stock of \$75,000, for the purpose of building dams and erecting power plants. Eugene Zimmerman, Cincinnati, Ohio, is one of the stockholders.

The auxiliary plant of the Peninsular Power Company, located at Iron Mountain, Mich., will be increased to 2500 hp. this fall.

The village of South Range, Mich., has contracted with the Houghton County Electric Light Company for a new lighting system.

The Prentiss Screen Door Company, Adrian, Mich., is planning a large addition to its plant.

The Munising Veneer Company, Munising, Mich., has been organized for the manufacture of veneers, with Wm. G. Mather, president and treasurer, Wm. Chandler, vice-president, and Sherman T. Handy, secretary. The company has taken over the Great Lakes Veneer Company.

The Eddy Paper Company has been organized at White Pigeon, Mich., and has taken over and is operating the plant of the Michigan Boxboard Company. Frank H. Milham is president of the new company.

A company has been organized at Evart, Mich., to take over the business of the American Logging Tool Company of that place, capitalized at \$200,000. H. H. Bassett, Columbus, Ind., is president of the new company; R. C. Morley, Saginaw, Mich., vice-president; N. W. Ely, Chicago, secretary and manager, and V. R. Davy, Evart, treasurer.

Plans are under way for a bundle-tying machine factory to be located at Blissfield, Mich. Frank Saxton, Stephen Hall, L. C. Hoagland and Dr. Will Lamley, all of Blissfield, are among those interested.

The Kirsch Curtain Rod Company, Sturgis, Mich., is erecting an addition to its plant.

Rogers & Bounah, Detroit, will erect a two-story brick office and factory building 40 x 105 x 32 ft. for the W. H. Hill Company, at a cost of \$13,000.

## Cleveland

CLEVELAND, OHIO, August 27, 1912.

The machine tool trade in this territory continues active. A fairly good volume of business came out during the week. While no large orders were placed there were quite a few orders for lots of three or four tools and similar inquiries are pending. When business began to improve in various metal working industries in the spring many manufacturers were inclined to think that the activity was only a temporary spurt and they were not disposed to increase their shop equipment with the exception of tools that were needed for immediate use. However, now that the demand on manufacturing plants has not only kept up, but has further expanded there is a general feeling that there are prosperous times ahead, and many manufacturers who have not recently been buyers are beginning to show some interest in the machine tool market and are expected to buy additional equipment. As it is between seasons in the automobile trade not much business is coming from that source at present, but a fair volume of buying is expected from that industry in the fall. In the spring this market was crowded with second hand machinery, but this has been well cleaned out recently, so that the quantity of such machinery now offered for sale appears to be below normal.

A new power pipe cutting off and threading machine will be placed on the market by the Pipe Machinery Company, Cleveland, Ohio, which has been incorporated with a capital stock of \$10,000. The company has established a plant at 4907 Mead avenue. William G. Benninghoff, the inventor of the machine, is president and treasurer. He was connected with the Taylor & Wilson Mfg. Company, Pittsburgh, a number of years. W. C. Grosser is vice-president and secretary. The company will manufacture the machine in sizes from 1 to 12 in. and will also make dies.

The Eberling Cement Machinery Company, Cleveland, Ohio, has been incorporated with a capital stock of \$100,000 to manufacture machinery for making cement, tile and other clay products. The incorporators are William J. Wilson, R. M. Zimmerman, M. J. Gillen, J. L. Quigley and Eugene Quigley.

The plant of the Superior Drop Forge & Mfg. Company, Cleveland, Ohio, including buildings and machinery, will be sold at auction in bankruptcy proceedings September 5 at the court of the referee in bankruptcy, 1409 Williamson Building, Cleveland. The plant is practically new. In addition to small tools, forge shop equipment, cranes, furnaces, etc., it is equipped with about 30 machines, a list of which will be found in the Clearing House section of this issue of *The Iron Age*.

The Willys-Overland Company, Toledo, Ohio, which recently acquired the Garford automobile plant in Elyria, Ohio, will at once begin the erection of an addition to the Garford plant 60 x 300 ft. It is also stated that another four-story factory building will probably be erected in connection with the Garford plant within a year. Among other improvements to be made at this plant is the installation of an automatic sprinkler system.

The Toledo Glass Company, Toledo, Ohio, has about completed plans for a new glass factory for which bids will be asked shortly. The building will be of steel and



concrete. The plans are being prepared by the De Vore-McGormley Engineering Company, Toledo.

A new power building for factory purposes will be erected on Hamilton avenue, N. E., Cleveland, by P. S. Balkwill. The building will be of brick and steel construction, 95 x 120 ft., two stories, equipped with a hot water heating plant and sprinkler system. The building will be leased to small manufacturing concerns.

The Firestone Tire & Rubber Company, Akron, Ohio, will enlarge its plant by the erection of a steel and concrete building, 95 x 125 ft., five stories. The general contract has been awarded to the Hunken-Conkey Construction Company, Cleveland. T. H. Brooks & Co., Cleveland, have the contract for the steel.

The Youngstown Foundry & Machine Company, Youngstown, Ohio, will enlarge its foundry by the erection of an addition 34 x 98 ft. A large building now under construction will be used for pattern storage purposes. The company has just received an order for three large spike machines from the Lackawanna Steel Company.

It is announced that a new plant will be erected in Alliance, Ohio, for the Pittsburgh Novelty Works. W. W. Matchett, architect, Alliance, is preparing plans. The new building will be 60 x 120 ft., two stories and basement.

The erection of a new plant by the East Palestine Rubber Company, East Palestine, Ohio, recently incorporated with a capital stock of \$50,000, will be started at once. The plant will include a main building 50 x 110 ft., one story, of brick construction, and a power plant 35 x 50 ft.

The Night & Day Lock Company, Circleville, Ohio, has been incorporated with a capital stock of \$25,000 by A. W. Summers, W. E. Caskey, George L. Lindsay, C. E. Kingsbury and G. I. Nickerson.

The Wellman Bronze Company, Cleveland, has increased its capital stock from \$25,000 to \$50,000.

The Fremont Furnace Company, Fremont, Ohio, will enlarge its plant by the erection of a one-story brick warehouse 47 x 155 ft.

The Sanitary Furnace Supply Company, Canton, Ohio, has been incorporated with a capital stock of \$100,000 by Geo. D. Viers, C. N. Wilson, W. B. Dager, R. E. Butler and Chas. H. Nusbaum.

The West Steel Casting Company, Cleveland, is enlarging its plant to nearly double the present capacity for making medium and small castings by the converter and crucible processes.

## Cincinnati

CINCINNATI, OHIO, August 27, 1912.

A slight let up in both the domestic and foreign inquiry characterizes the machinery market this week. There are still a number of unclosed lists of machine tools before the trade and the temporary lull experienced does not cause uneasiness, as many signs point toward one of the most active periods ever experienced by manufacturers in this territory for the last three months of the year. One disturbing factor is the almost certain car shortage that is even now felt in some districts. However, this has brought out some excellent business from the railroads for machine tools. Electrical equipment is in good demand. A quarterly report it has just issued shows that the Triumph Electric Company, Oakley, did 75 per cent. more business in May, June and July than in any similar period of its existence. Second hand machinery dealers report some improvement in conditions. The foundries are busier.

The H. C. Hazen Contracting Company, Cincinnati, has secured the contract for a nine-story brick, steel and concrete warehouse to be erected for the Fleishmann Company at Riverside suburb and for which considerable structural material and heating equipment will be required.

The Medina Machine Company, Medina, Ohio, has been incorporated with \$25,000 capital stock to deal in and repair all kinds of machinery. F. W. Woods and F. M. Branch are named among the incorporators.

The Miller Shoe Mfg. Company, Cincinnati, has increased its capital stock from \$50,000 to \$150,000, and it is rumored will make some additions to its plant at an early date.

It is reported from Frankfort, Ky., that the Modes Glass Works has been reorganized and will reopen its plant that has been idle for over a year past. Some extensive additions are contemplated.

Ames & Agnew, 4611 Main avenue, Norwood, Ohio, have purchased a site on which will be erected a concrete block manufacturing plant. Only a small amount of equipment will be needed, as the firm intends moving

an old plant from Silverton suburb to the new location.

The J. C. Hopkins Mfg. Company, Cincinnati, has been incorporated with \$10,000 capital stock and will fit up a plant for the manufacture of automobile gloves and infants' shoes. John C. Hopkins is general manager.

J. J. Sullivan, Cincinnati, will erect a public garage on Michigan avenue and will install a small repair shop.

Work on the new addition to the Oakley plant of the Alvey-Ferguson Company, Cincinnati, will be commenced at an early date. The Allyn Company, Second National Bank, Cincinnati, has the plans in charge.

There is an unconfirmed report that the Erie Railroad intends erecting a large central repair shop at Marion, Ohio, and that its shops at Huntington, Ind., and Galion, Ohio, will eventually be moved to the new location.

The Charles H. Warford Company, Dayton, Ohio, has been incorporated with \$10,000 capital stock and will make a specialty of constructing electric lighting and waterworks plants, as well as structural steel work.

The Modern Foundry Company, Oakley, Ohio, has its new addition in full operation. All necessary equipment has been purchased.

The Kanawha Glass Company, Charleston, W. Va., recently mentioned as having been incorporated with \$75,000 capital stock, will establish its plant for the manufacture of glass, etc., at Cedar Grove. The incorporators are L. H. Harrison, J. D. Cribble, both of Charleston, E. L. Michie and Carl P. Tompkins of Cedar Grove.

## The Central South

LOUISVILLE, KY., August 27, 1912.

Some improvement is observed in the machinery situation in this territory, especially in the number of inquiries. While a seasonable quietness remains in some lines power machinery, especially electrical apparatus, has taken on new life, while there is also a good demand for special equipment in a few lines, although as a rule machine builders report that there is comparatively little demand for such equipment. Large building operations and public improvements in the way of electric light plants and waterworks are furnishing the basis of most of the sales which are being reported. The outlook for the fall trade is now considered much better than heretofore.

The American Machine Company, Louisville, is building three passenger and five automatic freight elevators for the new Louisville city hospital and reports that it has found an excellent demand for elevators in most sections of the country.

Following an active season in the installation of drying equipment in distilleries and breweries the Louisville Drying Machine Company is now finding trade less active. The outlook for the fall is considered fair.

Though numerous inquiries for ice machinery and power equipment have been received comparatively few contracts have been let, according to the Henry Vogt Machine Company, Louisville, most of those in the market apparently preferring to delay purchases.

The James Clark, Jr., Electric Company has sold a 300 kw., 250 volt engine type generator to the Henry Vogt Machine Company. It will be direct connected to a Corliss engine. The same company has shipped a 250 kw., 200 volt generator for installation in the electric light plant of George A. Booser, Corning, Ark.

E. D. Morton & Co., Louisville machinery dealers, have sold two Greaves & Klusman lathes to the Louisville Water Company, which is enlarging its machine shop.

The bids for the power equipment to be installed in the new building of the Louisville Y. M. C. A. will be closed August 31. The equipment consists of boilers, engines, generators and heating apparatus. The plant will have a generating capacity of close to 300 kw. McDonald & Dodd, Louisville, who designed the building, will receive the bids. The subcontract for the elevators, which are two in number, has been placed with the Otis Elevator Company.

The Kentucky Tobacco Product Company, Louisville, has let contracts for the equipment to be installed in its new machine shop. It has purchased a Rahn & Larmon lathe, a drill press of the Sibley Machine Tool Company, South Bend, Ind., and a 7½ hp. motor from the Westinghouse Electric & Mfg. Company, as well as several smaller items.

The W. T. Pyne Mill & Supply Company, which specializes in distillery equipment, has added a structural department to its plant and is now turning out stacks, tanks and sheet metal work generally. It purchased a punch, shears and other equipment for this department through Joseph T. Ryerson & Son, Chicago.

The Kentucky Utilities Company has been incorpo-

rated in Louisville by Chicago men with \$2,000,000 capital stock. The exact nature of the new concern has not been disclosed, but it is assumed from the operations of similar corporations in this territory of late that it will take over a number of small public service companies, improve their plants and operate them on a larger scale. Samuel Insull, Chicago, is one of those spoken of in this connection.

The Howard Ship Yards & Dock Company has been incorporated in Jeffersonville, Ind., opposite Louisville, with \$800,000 capital stock. The incorporators are Edmonds J. Howard, Clyde Howard and J. H. Armstrong. Edmonds J. Howard is to be president and general manager. This is the incorporation of a concern which has been conducting shipyards for several generations. The new company, it is stated, will greatly enlarge the steel department of its business, wooden boats having lost their hold in the trade. Much new equipment will be installed in this department, iron working machinery of all kinds being included in the list, which has not yet been formally made up. The improvements are to be undertaken in the near future. One of the features of the business is to be the manufacture of steel barges for the coal trade. Most of these are made of wood, but there has been a growing tendency to construct them of steel.

S. L. Cummins and J. A. Proctor, Crab Orchard, Ky., are planning the erection of a flour mill with a capacity of 60 barrels a day.

The Raccoon Coal Company, which will open an important coal deposit near Hazard, Ky., is ready to receive bids on the equipment, which will consist of electric power machinery, conveying apparatus, etc. S. A. D. Jones is general manager.

Russellville, Ky., is contemplating a bond issue of \$18,000 for the purpose of enlarging and improving its waterworks system. The issue will probably be voted on at the November election.

The Union Water Works Company is being organized at Hazard, Ky., and will install a plant of moderate capacity. J. E. Johnson, F. J. Eversole and others are interested in the company, Mr. Johnson being president. J. L. Morrison is chairman of the committee in charge of construction.

The Randolph Brake Company has been organized at Paducah, Ky., with \$10,000 capital stock. Charles K. Wheeler, H. B. Sewell and J. W. McNeely are members of the company.

Thomas Moore, Winchester, Ky., has patented a derrick for farm use and is planning the organization of a company to manufacture and market it.

The Southern Lumber & Mfg. Company, Nashville, Tenn., is in the market for machinery to manufacture staves. It is to develop a large tract of hardwood timber in White County, Tenn.

Dr. T. T. Simmons, Pine Bluff, Ark., and others have purchased the building of the old State National Bank, Memphis, Tenn., and will erect a 20-story building on the site, it is stated.

The Nashville, Tenn., Hosiery Mills is planning removal to Bridgeport, Ala., or Cookeville, Tenn., it is reported. Operations will probably be enlarged. J. H. McPhail is president.

The Arkansas & Memphis Railway Bridge & Terminal Company has been authorized by act of Congress to build and operate a bridge over the Mississippi River at Memphis, Tenn. It will cost \$4,500,000 and the company will build shops and roundhouses in connection with it at large expense. Work is to begin in the immediate future. W. S. Tinsman, assistant to the president of the Rock Island, which is financing the construction of the bridge and terminals, is president of the bridge company.

Commissioner of Education Evans, Chattanooga, Tenn., is making plans for the extension of manual training work in the schools of that city. W. R. Lockwood is in charge of the work in the high schools.

The trustees of the William R. Moore College of Technology, Memphis, Tenn., are preparing organization and will soon be in a position to begin work. About \$500,000 is available for the erection and equipment of buildings. T. O. Vinton, F. G. Proutt and other trustees are now engaged in the selection of a site.

The industrial bureau of Nashville, Tenn., is endeavoring to secure the location of a malleable iron and steel castings plant. A. P. Foster is secretary of the bureau.

P. S. Milne, Birmingham, Ala., is chief engineer in charge of plans for the construction of a new electric railroad from that city to Chattanooga, Tenn. Arrangements for terminals in Chattanooga have been

completed and plans for the construction of bridges and the location of power stations are now being made.

Blackville, S. C., will receive bids through its Board of Commissioners until September 20 for furnishing of all materials and labor for a complete waterworks, sewer and sewage disposal systems. Address W. A. Dyles, clerk.

The Commissioners of St. George, S. C., will open bids September 10 for the construction of a waterworks complete.

J. P. Campbell, Jacksonville, Fla., is having plans prepared for the erection of a plant to manufacture sprinkling devices for irrigation. Most of the machinery needed has been purchased, but the company is still in need of a toggle press that will take blanks  $4\frac{3}{4}$  in. in diameter, 3 in. deep and 20-gauge drawn sheet brass.

## Birmingham

BIRMINGHAM, ALA., August 26, 1912.

A steady and increasingly brisk demand is felt in all machinery lines. Mill supplies and small material have been going well all through the month, but latterly engines, boilers and sizeable pumps have been in demand. The sawmills are more active, and there seems to be a spurt in the mining trade, from which much of recent business has come. The increase in inquiries from and the business with the coal mines are especially notable. The iron market activity is being reflected in all directions which furnish raw material for the blast furnaces. Business generally has greatly improved over what it was at the first of the month and the prospect is for still larger transactions all round.

The Hastings Cold Storage Company, Hastings, Fla., has increased its capital stock to \$40,000 and will install an electric lighting plant. F. E. Bugbee is president.

The Crystal Springs Bleachery Company, Crystal Springs, Ga., contemplates establishing a cotton mill with about 2000 spindles and 800 looms.

The All Steel Ginnery Company has been chartered at Greensboro, Ga., by R. L. Caldwell, J. R. Spinks and others to establish a \$7,000 ginnery. It will need a high-pressure boiler and automatic engine.

The Rock Gin Company has applied for charter at Rock, Ga., by J. T. Garland and others, and will establish a \$10,000 ginnery.

An ice plant with a daily capacity of 12 tons will be built by W. R. Parsons at Manchester, Ga.

The plant of the Montgomery Marble Works, Montgomery, Ala., will be enlarged at a cost of \$25,000. E. C. Ramage is manager.

Eufaula, Ala., contemplates the installation of electric pumps at the municipal water plant. C. G. Mercer is mayor.

G. B. Brazeale, Jasper, Ala., will enlarge his wood-working shop and install machinery for making wagons and buggies.

The McRee Packing Company will install a packing plant at Tampa, Fla.

The Mobile Electric Company, Mobile, Ala., will enlarge the capacity of its power plant at a cost of \$85,000. T. K. Jackson is general manager.

A stave mill will be established at Elkton, Fla., by the Farmers' Mfg. Company. A heading mill will be built later.

Application has been made at Brunswick, Ga., for the incorporation of the Georgia Coast Lumber Company to establish sawmills, dry-kiln and other wood-working plants. The capital stock is \$50,000, with privilege to increase to \$250,000. C. H. Dudley, Brunswick, is one of the incorporators.

W. K. Wentworth, Chicago, president of the Great Eastern Lumber Company, announces that his company will begin at once near Savannah, Ga., the establishment of an extensive lumber plant on a tract of several thousand acres. Frank J. Skeffington, Savannah, is interested.

The Southern Art Glass Company, Jacksonville, Fla., will enlarge its manufacturing department. H. E. Boss is manager.

Rapid progress is being made on the large wood-working plant of the Kaul Lumber Company near Tuscaloosa, Ala. The planing mill will be of steel and iron construction, with a capacity of 150,000 ft. per day, and other plants are to be in proportion. John L. Kaul, Birmingham, is president.



## Indianapolis

INDIANAPOLIS, IND., August 27, 1912.

Carl G. Fisher and James A. Allison, Indianapolis, have purchased the controlling interest in the Esterline Company, Lafayette, Ind., manufacturer of the Berdon system of electric lighting for automobiles. The plant will be removed to Indianapolis to become part of the Horseless City being established near the Indianapolis Speedway, where many factories connected with the building of all that pertains to motor vehicles are to be built. The capital stock of the Esterline Company was recently increased to \$260,000.

The Mais Motor Truck Company, Indianapolis, which has been in the hands of a receiver, has been sold to a number of Indiana capitalists and a new company with \$1,000,000 capital stock has been organized under the same name. Frank H. Wheeler, Indianapolis, owns 50 per cent. of the stock. Others interested are Delavan Smith, A. S. Lockard and Dr. A. E. Sterne, Indianapolis; H. G. Francis, W. M. Pearce and A. A. Irwin, Rushville, and J. V. Stimson, Huntingburg. The company manufactures motor trucks and has many orders on hand. Mr. Wheeler is of the Wheeler & Schebler Company, this city, manufacturer of carburetors. The plant comprises four buildings with seven acres of ground.

The Hydraulic Transmission Company, Indianapolis, has been incorporated with \$200,000 capital stock to manufacture hydraulic transmissions. The directors are Wm. K., Ernest and Paul Milholland. The principal product will be a clutch for automobiles to give variable speed without shock.

The Keyless Lock Company, Indianapolis, will build a two-story fireproof foundry, to cost \$75,000, to be used exclusively for the manufacture of brass and aluminum castings and operated independently of the present plant which manufactures metal furniture. No timber is to be used in the construction of the building. The equipment is to be the most modern. Oil furnaces will be used instead of coke ovens. A large battery of molding machines and a sand-blast will be installed. The capacity of the plant will be 10,000 lb. a day.

The Indianapolis City Council has voted \$10,000 for the establishment of a sewage disposal experiment station.

The R. J. Irvin Mfg. Company, Indianapolis, has let the contract for a two-story factory building to cost \$50,000. The company manufactures automobile bodies and tops. The building will be 50 x 400 ft. Two other buildings will be occupied, respectively 50 x 275 ft. and 50 x 126 ft.

The Otwell Wagon & Novelty Company, Otwell, Ind., has been incorporated with \$4,000 capital stock to manufacture wagons and novelties. The directors are A. Dillon, J. O. Gray and J. F. Willis.

The Connersville Wheel Company, Connersville, Ind., has disposed of its wheelmaking machinery and stock to the Muncie Wheel Company and has arranged to undertake the manufacture of automobiles for the Empire Automobile Company, formerly of Greenville, Pa.

Fred R. Schafer, 1005 South Lafayette street, South Bend, Ind., will erect a machine shop in the near future.

Under the receivership of Fred C. Gardner an extension of time with no definite date of sale has been allowed for the disposal of the plant of the Atlas Engine Works, Indianapolis. Prospective buyers failed to materialize and further bids are being sought.

The Hill-Stage Company, Anderson, Ind., has been incorporated to manufacture automobile repair machinery. The capital stock is \$5,000. The directors are Hugh Hill, Forest J. and E. N. Hill and H. C. Stage.

The Howard Shipyards & Dock Company, Jeffersonville, Ind., has been incorporated with \$800,000 capital stock to build boats. The directors are J. E. Howard, E. J. Clyde, J. H. Armstrong, M. Z. Stannard and C. Howard.

The Angola-Waterloo Utilities Company, Angola, Ind., has been incorporated with \$65,000 capital stock to furnish heat, light and power. The directors are I. W. Durfee, T. S. McGrath and J. J. Elliott.

The Indiana Utilities Company, Angola, Ind., has been incorporated with \$200,000 capital stock to furnish heat, light and power. The directors are J. E. Van Natta, H. L. Hanley and A. M. Steelhammer.

The Clark Perpetual Motion Company, Terre Haute, Ind., has been incorporated with \$100,000 capital stock to manufacture perpetual motion machines. The directors are F. Clark, S. T. Mann and D. W. McElhaney.

The Columbus Machine Works has secured a contract to install a new steam heating plant, water pipes, etc., in the new school building at Whiteland, Ind., for which the contract price is \$10,500.

The Citizens' Heat, Light & Power Company, Winchester, Ind., has been incorporated with \$400,000 capital stock to furnish heat, light and power. The directors are J. T. Moorman, E. F. Kitselman and E. S. Goodrich. It is to extend the scope of the Citizens' Light & Water Company.

## St. Louis

ST. LOUIS, MO., August 26, 1912.

Business in machine tools has shown a very satisfactory state of affairs, and the total for the month gives evidence now of mounting into excellent figures. There has been demand for both new and second hand tools during the week and there are indications of increasing request as the season progresses.

The Henry Heil Chemical Company, St. Louis, will build immediately a five-story addition to its chemical manufacturing plant and will be in the market soon for equipment therefor.

The Thomas Anti-Rust Paint Company, St. Louis, has been organized with \$25,000 capital stock by H. L. McNail, V. R. and W. A. Thomas and will equip a plant for the grinding and other preparation of paints.

The Universal Stereotype Company of Delaware has been authorized to use \$50,000 of its capital in a branch plant at St. Louis.

The Farmers' Telephone Company, Fisk, Mo., with \$25,000 capital stock, has been incorporated by W. J. Harrington, R. P. Neel, John F. Jordan and others to establish a rural telephone system.

The city of Kennett, Mo., has voted a bond issue of \$75,000 to be expended for water works and sewage plants.

The city of Cape Girardeau, Mo., will vote October 1 on a bond issue of \$250,000 for municipal electric light and water works plants.

The Motograph Company of America, St. Louis, Mo., with \$20,000 capital stock, has been incorporated by Geo. W. Helmerich, Frank X. Hiemens and Albert Kochs to manufacture moving picture machines under a newly issued patent.

The Ardery-Holliday Motor Company, St. Joseph, Mo., with \$10,000 capital stock, has been incorporated by J. W. Ardery, J. W. Holliday, Jr., and W. S. Thompson to equip a motor manufacturing and repair plant.

The General Appliance Company, St. Louis, with \$80,000 capital stock, has been organized by William J. Mills, George F. Hausen and H. K. Wagner to establish and equip a manufacturing plant for the making of brake shoes under a new patent.

The McCabe-Steen Tracklaying Machine Company has been organized at Kansas City, Mo., with \$50,000 capital stock by Samuel E. Sexton, George and Victor Huckle, Frank W. McCabe and Vernon E. Steen to establish a plant for the manufacture of track laying machinery.

The St. Louis Motor Truck Company has increased its capital from \$17,500 to \$22,500 for the purpose of enlarging its mechanical equipment.

The Illinois Evaporating Company, Lena, Ill., has been incorporated with \$25,000 capital stock by Allen Salter, H. C. Houser and George W. Benfer and will put in equipment for a fruit evaporating plant.

The Lincoln Extractor Company, Lincoln, Ill., has been incorporated with \$50,000 capital stock by Harry E. McGrath, Chas. J. Gehlbach and L. S. Mangas for the establishment of a plant for the manufacture of farm machinery.

The Stonewall Cotton Mills Company, Stonewall, Miss., is completing a large addition to the plant and about \$60,000 of mechanical equipment will be required.

The Jefferson County Free Bridge Commission, at Pine Bluff, Ark., has completed plans for the construction of a steel bridge across the Arkansas River at that point.

The Board of Supervisors at Sardis, Miss., has under consideration the construction of steel bridges across two streams near that town.

The Board of Public Improvements of St. Louis will receive bids until September 3 for the sixth section—a part of the west approach—of the municipal free bridge.

Ottawa County, Oklahoma, of which Miami is the county seat, will vote September 28 on a bond issue of \$100,000 to be expended on steel bridges.

The Norman Canadian Bridge Company, Norman, Okla., has completed plans for the construction of a bridge across the Canadian River at that point to cost \$40,000.

A new canning plant is to be built and equipped at Lepanto, Ark., by W. C. Dawson of that city.

The Ponchatoula Ice Company, Ponchatoula, La., has completed plans for the equipping of a large cannery in conjunction with its ice plant.

A cotton gin and a grist mill are to be built and equipped at Kensett, Mo., by J. U. Dunnivant, of Des Arc, Ark., and D. R. Scott, of Little Rock, Ark.

The Tennessee Improved Cotton Gin Company, Jackson, Tenn., has been incorporated with \$20,000 capital stock by P. Rand, L. N. Hine and L. F. Jackson.

The Netherlands Company, Chicago, which has removed its headquarters to the Maison Blanche, New Orleans, La., is preparing to construct a pumping equipment to drain 5000 acres. Cornelius J. Ton, of Grand Rapids, Mich., is president.

Lafayette, La., will vote September 15 on the question of a 10 years' special tax to rebuild its electric light and water works plants completely. Much equipment will be required.

The city of Lake Providence, La., is in the market for an additional engine and dynamo in its municipal electric light plant. An ice plant will be constructed at the same time.

The construction of an electric light plant at Maryville, Mo., has been definitely decided upon by the Maryville Electric Light & Power Company, of which Richard Kuchs is the head.

The Sand Springs Interurban Company, with offices at Sand Springs, Okla., will install a gas engine of 750 hp.

The Manchac Lumber Company, Plaquemine, La., of which Henry E. Sherburne is president, has plans to establish a new saw mill.

A band and gang saw mill is to be built on a tract near Jackson, Miss., with a capacity of 100,000 ft. per day by L. Sparkman, of Ulmer, Tex., who owns about 35,000 acres.

A new saw mill is to be equipped at Hattiesburg, Miss., by the Gulf Arm & Creosoting Company, which recently installed a shingle mill.

The El Reno Broom Company, El Reno, Okla., has been incorporated with \$20,000 capital stock by W. H. Smith, N. M. Bodine and L. B. Myers to equip a broom manufacturing plant.

The city of Magnolia, Ark., has created a water works district and is preparing to advertise for bids. The work will be under the direction of D. H. Hutcheson, J. W. Colquet and A. M. Crumpler.

Tonkawa, Okla., has voted a \$20,000 bond issue for water works purposes. The Mayor has charge of the work.

The Arkansas Cooperage Company, Jennie, Ark., has been organized with \$15,000 capital stock and will equip a plant for the manufacture of cooperage stock.

The Baist Shingle Company, Plaquemine, La., which recently equipped a shingle mill, will be in the market later for stave and saw mill machinery.

The city of Muskogee, Okla., is receiving bids until September 3 for two 250-hp. water tube boilers. Commissioner Joseph McCusker is in charge.

The Black & Norton Company, Brindley, Ark., has been incorporated with a capital stock of \$100,000 to manufacture handles, etc. The incorporators are J. T. Black, J. L. Norton and C. G. Norton.

The Roberts, Johnson & Rand branch of the International Shoe Company is about to erect a five-story factory for the manufacture of heels for shoes on Mississippi avenue, St. Louis. The building is to occupy an area of 50 x 204 ft. and to cost \$50,000.

## Texas

AUSTIN, TEXAS, August 24, 1912.

What is considered the most significant feature of the machinery trade situation this week is the large increase in the number of proposed new manufacturing plants as is shown by the organization of companies. Other lines of industrial development are proving of much benefit to machinery dealers throughout the State and the Southwest. Prospects are favorable for much activity in railroad construction this fall. Many large irrigation enterprises are in the formative stage.

Plans have been adopted for doubling the capacity of the plant of the McKinney Cotton Mills at McKinney. The new installation will consist of 5280 spindles and 162 looms. The mills are devoted chiefly to the manufacture of denim, bed-ticking, shirting and awning. The entire output is sold in Texas.

The Mart Sewer Company has been granted a franchise by the City Council of Mart to construct a sewer system. The O'Neal Engineering Company, Dallas, has been employed as supervising and consulting engineer.

The San Benito Ice & Cold Storage Company will enlarge the capacity of its ice factory and cold-storage plant at San Benito, and will also install new plants at Harlingen and Bay City. The St. Louis, Brownsville & Mexico Railroad has entered into a contract with the company for the purchase of not less than 20,000 tons of ice annually for a period of 15 years, for icing cars of perishable products.

The Peden Iron & Steel Company will install additional equipment and enlarge its plant at Houston at a cost of about \$300,000. It is erecting a new warehouse there and will also make improvements to its branch establishment in San Antonio.

The National Lumber & Creosoting Company, Texarkana, has made an appropriation of \$200,000 for the erection of a large creosoting plant at Trice. It will be devoted to treating railroad ties, piling, poles, bridge timber and paving block.

An issue of \$32,000 of bonds has been voted by the taxpayers of Yoakum for the construction of a municipal sewer system.

It is announced by the Southern Pacific Company that among the improvements that are to be made in Texas out of the appropriation of \$4,000,000 for its Atlantic system are new shops, boiler works and other buildings and equipment in Houston. A large central electric power station will also be installed and the machinery of the shops will be operated by electrical energy instead of by steam as at present.

The bid of the Allis-Chalmers Company, Milwaukee, for furnishing the city of Waco with pumps for the waterworks plant has been accepted by the municipal water commission, the consideration being \$38,912.

H. T. Ball, Ann Arbor, Mich., and associates will soon let the contract for the installation of a gas plant and the laying of a distributing system at Brenham.

The Comanche Farmers' Gin Company has been organized at Comanche, with a capital stock of \$20,000, for the purpose of installing a cotton gin. The incorporators are J. B. Payne, W. J. Stewart, J. H. Bowman and others.

The commissioners' court of Terrel County has granted a franchise to the Citizens' Water Company for the installation of a waterworks plant and the laying of a distributing system for Sanderson.

Ed McGinley is arranging to install an electric light plant at Sanderson. He will also erect an ice factory.

The Texas Button Company, which was recently organized with a capital stock of \$25,000 at Arlington, will establish a factory for making advertising novelties.

The San Saba Marble Company has installed machinery for testing the marble deposits near San Saba, preparatory to putting in a quarrying plant.

The Yellow Pine Paper Mill Company will install additional machinery and equipment in its paper mill at Orange. The capacity of the pulp-making department will be doubled.

The commissioners' court has let the contracts for the new county jail of Harris County at Houston, as follows: Pauly Jail Building Company, tool-proof cell work, \$21,000; Lewis & Kitchens, heating and ventilating, \$16,050; Robischung Bros., plumbing, \$10,417; total, \$47,683.

An irrigation district of about 15,000 acres of land has been formed in El Paso County, and bonds amounting to \$71,000 have been voted for the purpose of constructing a system of irrigation to water the tract.

Walker's Ice & Cold Storage Company has been organized at Austin with a capital stock of \$150,000. It is installing an ice and cold-storage plant. Del Walker, J. C. Walker and J. B. Pearson are interested.

The Winfield Pottery Company, Winfield, organized with a capital stock of \$30,000, will establish a plant for the manufacture of pottery. The incorporators are P. E. Miller, A. N. Holmes and J. C. Glass.

The Nocona Cotton Oil Company, Nocona, organized with a capital stock of \$30,000, will establish a cotton-seed oil mill. The incorporators are L. A. Hodges, F. S. Wilson and W. H. Gentry.

The Denison Mill & Grain Company, Denison, has increased its capital stock to \$75,000 from \$60,000, and will make improvements to its plant.

The Farmers' Gin Company, Coolidge, formed with a capital stock of \$15,000, will install a cotton gin. The incorporators are S. E. McLellan, J. A. Johnson and G. L. Vinson.

The El Campo Machine Company, El Campo, is preparing to move its plant for manufacturing irrigation pumps to El Paso. It plans to invest more than \$50,000 in the enterprise.



The Fraser Brick Company will establish a plant at Ginger, for the manufacture of brick. Its capital stock is \$50,000. The incorporators are W. D. Fraser, O. B. Freeman and J. H. Payne of Dallas.

The Kleburg Gin Company will install a cotton gin at Kleburg. The incorporators are M. C. Glenn, W. H. Floyd of Kleburg, and G. R. Jones of Dallas.

The Texas Utilities Corporation, Dallas, recently organized to take over and operate a number of electric light and power plants in different cities of northern Texas, has closed a deal for the purchase of the plant of the Palestine Electric Light & Ice Company. It is reported that the corporation will enlarge the plant and that it also has under consideration the construction of an electric railroad between Dallas and Palestine, about 100 miles.

It is announced that the Mexico Northwestern Railroad has financed its proposed extension from El Paso to Quanah, Texas, in London, Eng., and that the contract for the construction of the line will be let in a short time. It will be about 450 miles long. Dr. F. S. Pearson of New York and London is the head of the British syndicate.

The Missouri, Kansas & Texas Railway is installing new machinery in its railroad shops at Denison.

The Trussed Concrete Steel Company, Dallas, has been organized with a capital stock of \$10,000. The incorporators are J. H. Smith, J. M. Johnson and Julius Kahn.

Extensions and improvements to the waterworks plant and distributing system and sewer system will be made by the city of Port Arthur, bonds to the sum of \$460,000 having been issued and sold by the city for the purchase of these public utilities and their enlargement.

The Trinity Power Company, Trinity, has been organized with a capital stock of \$4,000. The incorporators are H. H. Thompson, W. A. Bell and Jacob Embury.

Eduardo Hartman and associates will establish large lumber mills near Llano Grande, Durango, Mexico.

A. S. Votaw of Pineapple City, Vera Cruz, Mexico, and associates are having plans prepared for a sugar mill.

The city of Pachuca, Mexico, has acquired the waterworks plant and distributing system and will make improvements to the property.

## Eastern Canada

TORONTO, August 26, 1912.

Ontario and other Eastern provinces are now sending men into the prairie provinces to assist in harvesting the greatest grain crop ever produced in that part of Canada. The men who are joining these harvest excursions are in few cases a direct loss to the labor force of the Eastern manufacturing industries, as they are largely farmers whose own crop is saved, and farmers' sons and farm laborers, with some unskilled workers from the cities. But if the help thus sent does not cause any drawback to manufacturing industry, it is of enormous moment to the agricultural production of the country and to the whole commerce resting thereon. The greatest year's trade Canada ever had is reasonably certain to follow from this harvest. The railroads and the banks appear to be in a fair state of preparedness for the crop movement. It is improbable that with all their additions to rolling stock the railroads will be quite equal to the task of moving all the grain that will be offered them this autumn, but they are likely to move enough to support the largest autumn trade the country ever had. The banks will have their resources taxed to provide for the crop movement and keep manufacturing industry in funds at the same time, but it is not expected that there will be any serious curtailment of the accommodation they are now affording to the manufacturers.

A refining company in which Dr. J. S. Island is interested has bought a 50-acre site in the east end of Hamilton, Ont.

The designs for the Canadian Fairbanks-Morse Company's new tractor factory in Toronto are being prepared. The building is to be on concrete foundations and of structural steel frame work. The forge shop will be 49 x 122 ft., the erecting shop 49 x 172 ft., the structural steel shop 49 x 318 ft., the tin shop 49 x 397 ft. and the testing room 49 x 76 ft.

The Wolfe Shoe Company is building a \$10,000 shoe factory at Berlin, Ont.

The La Clede Mfg. Company, Bridgeburg, Ont., is planning improvements and the installing of equipment.

The Canadian Wire & Iron Goods Company, Hamilton, Ont., is making an addition to its factory.

The Chisholm Transmitter Company will build a factory in London, Ont.

Walter Baker & Co. will make an addition to their Montreal factory.

The De Long Hook & Eye Company, Philadelphia, has purchased the plant of the National Pin Company, St. Mary's, Ont., and will make an addition to it.

The Erie Iron Works, St. Thomas, Ont., will add a foundry to its plant.

The Dominion Waste Mfg. Company, Toronto, will build two factories.

The Galt Brass Company, Galt, Ont., will erect and equip a factory in which to make plumbers' supplies.

The Martin-Senour Company, Montreal, will build a varnish factory there.

The Dominion Textile Company will extend its cotton mill at Magog, Que.

One of the largest pulp and paper enterprises ever launched in this country has been decided upon by the interests representing the Labrador Pulp & Power Company, involving the increase of the capitalization of the company from \$3,000,000 to \$15,000,000. Robert H. Reid, of New York, vice-president of the company, states that the undertaking means the development of one of the most important water powers in the country, the falls on the Hamilton River, which are only second in power to those of Niagara, and that two large mills will be built, one at Hamilton Inlet and the other at Sandwich Bay, the combined output of which will be 150,000 tons of paper yearly.

The Dominion Stamping Company, Limited, has erected a large forge shop in Walkerville, Ont., and is installing machinery of the latest improved type. The company, whose paid-up capital is \$250,000, expects to have in operation within 30 days one of the largest plants of its kind in the Dominion. Contracts have been closed with a number of the largest automobile manufacturers covering their 1913 requirements. In addition the company is erecting a four-story reinforced concrete building and power plant for its expanding sheet metal business, in which it has been engaged for over two years.

N. Curry, president of the Canadian Car & Foundry Company, Montreal, has advised the Mayor of Fort William, Ont., that contracts for the structural steel work of the company's plant there will be let at once and that it is expected cars will be building there next July.

The construction of the plant of the Roelofson Elevator Company at Galt, Ont., has been begun.

Canadian Motors, Ltd., is to have its plant in Galt, Ont., ready for operation in three months.

The Canadian Peerless Heater Company, recently organized, proposes to manufacture in Montreal the combination boiler and gas water heater which has been made and sold with success by the Peerless Heater Company of Chicago for several years. A number of well known local financiers have become interested in the project and the erection of the plant will be begun in the near future.

The Lake Shore Seed Company and the Dunkirk Seed Company, both of Dunkirk, N. Y., have amalgamated and will locate a plant at Welland, Ont. A site at Queen street and the Grand Trunk Railroad has been purchased and a factory and warehouse 45 x 100 ft., two stories and basement, will be built and equipped at once.

The City Council, Ottawa, Ont., has authorized the preparation of plans by Hazen & Whipple, engineers, New York City, for a mechanical filtration plant to be constructed on Lemieux Island.

## Western Canada

WINNIPEG, MAN., August 22, 1912.

The industrial outlook in western Canada continues very favorable. The situation is stimulated by the assurance of a very good grain crop, harvesting being now general in most parts of the country under satisfactory conditions. The machinery houses are booking a fairly large volume of business and they consider prospects for the coming months much better than at the corresponding time last year. Eastern and Southern manufacturers are steadily branching out in this part of the Dominion and every week the organization of one or more new concerns is announced either in Winnipeg or some other western Canada city. There is a good demand for waterworks supplies, the different cities and towns being anxious to get their plants in good shape

before winter. The railway companies are large consumers of machine shop tools of various kinds. The contract for the second section of the Hudson's Bay Railway has been awarded by the Dominion Government to the J. D. McArthur Construction Company.

The Hewitt Mines Company, Silverton, B. C., will rebuild the mill recently burned. The president of the concern is M. S. Davies.

George White & Son, London, Ont., contemplate the building of an engine and boiler plant at Moose Jaw, Sask.

The flour mill of the Union Supply Company, North Battleford, Sask., will be enlarged and new machinery installed.

By-laws have been passed at Wilkie, Sask., to provide \$41,500 for extension of waterworks and electric lighting systems.

The ratepayers of Calgary, Alberta, will vote shortly on a by-law to provide a filtering plant at a cost of \$400,000. James T. Child is the engineer.

The town of Bassano, Alberta, will install a water system at a cost of \$150,000.

The town of Kerrobert, Sask., will install a water system at a cost of \$65,000.

The announcement is made that the Canadian Pacific Railway Company has prepared plans and specifications for improvements on Island No. 1, Fort William, consisting of freight handling plants, coal docks, etc., to cost in the neighborhood of \$10,000,000. The work will extend over five years.

A concern of which W. J. Christie, of Winnipeg, is the head has secured a site at Medicine Hat, Alberta, for glass works.

Ground has been broken at Winnipeg for a new cotton and jute bag factory. The name of the firm has not yet been decided upon, but D. Michael, formerly of the Smart Bag Company, Ltd., Winnipeg, is the manager.

The Peerless Punctureless Tire Company, Ltd., Winnipeg, will install a manufacturing plant and will especially make a substitute for air and tubes in automobile casings.

The Great West Permanent Loan Company, Ltd., Winnipeg, has let a contract to the Carter-Halls-Aldinger Construction Company for a ten-story office building to cost about \$300,000. Three elevators will be installed and a special system of ventilation.

Alexander Fergusson, of Halifax, Nova Scotia, is contemplating establishing a boiler making and repair plant at Port Arthur, western Ontario.

J. G. Hobman, secretary-treasurer of the town of Imperial, Sask., is receiving tenders for the construction of a waterworks system there.

The city of Regina, Sask., will open bids September 14 for furnishing and erecting a steam turbine unit, switchboard, etc., for its lighting system.

Warehouse building goes on rapidly in Regina, Sask. That city is becoming a very important distributing center in the Canadian West, for goods made either in eastern Canada or in the United States. The following are among the manufacturers who have or are having warehouses erected there: Cockshutt Plow Company, Sawyer-Massey addition, Saskatoon Tent & Mattress Company, Cushing Bros. additions, R. H. Williams, Dominion Dairy & Produce Company, T. A. Smeed, Western Mfg. Company, International Harvester Company addition, Freeland Bros., National Mfg. Company, Constructors, Ltd., factory and warehouse, Smith Bros. & Wilson, Continental Oil Company addition, Armstrong, Smyth & Dowswell, Saskatchewan Building & Construction Company, Bartleman sash and door factory, E. L. Drewry, Mooney Seed Company, R. J. Lecky, B. C. Sugar Refinery, Gould, Shapley & Muir, Regina Trading Company, Corrugated Metal Culvert Company.

## Government Purchases

WASHINGTON, D. C., August 26, 1912.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids September 17, under schedule 4790, for one motor driven engine lathe and one motor driven milling machine for delivery to Hingham, Mass.

The Bureau of Yards and Docks, Navy Department, Washington, will open bids September 21 for a hydro-pneumatic elevator to be erected in the foundry at the navy yard, Puget Sound, Wash.

The Department of Commerce and Labor, Bureau of Lighthouses, Washington, will open bids August 30, for furnishing and delivering one direct-connected electric plant complete with oil engine and generator, switchboard and all necessary instruments. Delivery to

be made at the works of the Racine-Truscott Shell Lake Boat Mfg. Company, Muskegon, Mich.

The Paymaster-General, Navy Department, Washington, will open bids September 10, under schedule 4780, class 83, for 14 ventilating sets, three spare armatures and three dynamotors.

The United States Engineer Office, Portland, Ore., will open bids September 4 for constructing and delivering one floating pile driver complete.

## Trade Publications

**Chucks.**—E. Horton & Son Company, Windsor Locks, Conn. Catalogue. Deals with a very extensive line of either iron or steel lathe and drill chucks and face plate jaws. This line includes all of the chucks formerly designed and made by the S. E. Horton Machine Company and E. Horton & Son Company. The lathe chucks and the new face plate jaws of the former company were illustrated in *The Iron Age*, December 2, 1909, and June 30, 1910, respectively. One of the features of the catalogue is the showing on the last page of a number of tools fitted up with chucks as a suggestion to show special uses of the chucks.

**Electric Drilling and Grinding Machine.**—Standard Electric Tool Company, Cincinnati, Ohio. Two bulletins. D-6 treats of a line of high power ball-bearing electric drilling machines which were illustrated in *The Iron Age*, July 25, 1912, and G-5 relates to the Standard high power small portable electric grinding machines which are built for tool post and parallel work. If desired the former type can be converted into a bench machine. These tools were also illustrated in *The Iron Age*, July 25, 1912.

**Blowers.**—McEwen Bros., Wellsville, N. Y. Bulletin No. 2. Describes a line of blowers which are made with two types of runners, helical and propeller, for the high speeds most suitable for steam turbine drives. The bulletin contains data and performance curves of turbine-driven blowers showing the advantage of using blowers having economical speeds in common with those of the driving turbine. An illustrated description of this blower appeared in *The Iron Age*, August 8, 1912.

**Steam Turbine.**—Kerr Turbine Company, Wellsville, N. Y. Bulletin No. 26. Illustrates and describes the Economy steam turbine, an illustrated description of which appeared in *The Iron Age*, June 6, 1912. Views of actual installations are shown and interesting steam consumption curves are given. The economy in the amount of floor space required which is a special feature of this turbine is clearly brought out by the use of line drawings showing the outlines of both the old and the new styles.

**Pyrometers.**—Scientific Materials Company, Pittsburgh, Pa. Pamphlet. Illustrations and descriptive matter explain the operation of the Scimatco optical pyrometer which is employed for measuring temperatures from 150 to 7000 deg. C. Mention is also made of the various lines of apparatus which this company can furnish to metallurgical, chemical and physical laboratories.

## Waste Steam Drives Motors

In the plant of the Indiana Steel & Wire Company, Muncie, Ind., non-condensing engines operate a series of wire drawing benches and electric motors are employed to drive the machines which form the wire into wire fencing, wire nails, etc. Formerly the electric power for the operation of these motors was purchased from an outside source, but it was decided to utilize the exhaust steam from the engines operating the draw benches to generate this power and save the expense of purchasing it. The engines employed in connection with the wire drawing benches are two 22 x 42-in. Bates Corliss non-condensing engines which receive steam at a pressure of 100 lb. from a battery of boilers consisting of four 150-hp. and three 125-hp. units. Each engine carries an average load of from 370 to 400 hp. and operates continuously with the exception of Sundays and holidays.

When it was decided to make the change in the source of electric power supply a 600-kw. mixed pressure Curtis turbine built by the General Electric Company, Schenectady, N. Y., was installed and the exhaust of the two engines was conducted to a common header from which the turbine derives its steam at a pressure of 1 lb. gauge. The exhaust from the turbine is led into a Wheeler condenser which maintains a vacuum of 28 in. If the engines are shut down the mixed pressure turbine is not affected, as it automatically cuts in sufficient high pressure steam to meet its power requirements. The turbine now carries the entire load of the 60-cycle, 220-volt motors used for driving the various wire fencing and wire nail machines which amounts to 600 hp. In this way steam that was formerly allowed to go to waste is used and this economy has been effected without increasing the size of the engine room, the number of the boilers or the number of operators about the plant.



